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W. Gylbo
Dec. 17-1788

T H E
R U D I M E N T S
O F
P H Y S I C K

CLEARLY and ACCURATELY

Describ'd and Explain'd, in the most easy and familiar Manner, by Way of **DIALOGUE** between a **PHYSICIAN** and his **PUPIL**.

Under the following **HEADS**, viz.

- | | |
|--|--|
| I. PHYSIOLOGY : Or, The Nature and Principles of PHYSICK in general. | Mind; their Causes, Nature, Symptoms, &c. |
| II. HYGIENA : Which treats of HEALTH ; and discovers proper Means, and Remedies, for the Preservation of it. | IV. SEMEIOTICA : Which treats of the Signs and Indications of Health and Disease. |
| III. PATHOLOGY : Which considers the Diseases of the Body and | V. THERAPEUTICKS : Which is employ'd in finding out Remedies for Diseases; and the Method of applying them to perfect a Cure. |

To which are added,

Some **METHODS** of **CURE** in most **DISEASES**, both **Acute** and **Chronical**, according to the Practice of *Dr. Pitcairn*, *Boerhaave*, *Mead*, and others.

First collected from the Instructions of a celebrated Professor of MEDICINE in the Royal Academy of PARIS:
And since Improv'd from the best AUTHORS, Ancient and Modern,
By JOHN GROENVELT, M. D.
Now first translated from the LATIN, revised, and corrected in the most accurate Manner.

Printed for R. GOADBY, in *Sherborne*; and W. OWEN, near *Temple-Bar*, *London*.

THE
FUNDAMENTALS
OF
PHYSICS

CLARITY AND ACCURACY

Explains in the most clear and
familiar manner, by way of dialogue,
between a Philosopher and his Pupil.

Under the following Heads, viz.

- | | |
|---|--|
| I. PHYSIOLOGY, OR
The Nature and Structure
of the Human Body, and
the Principles of Life, and
the Functions of the
several Parts. | II. AERIAL PHYSICS, OR
The Nature and Properties
of Air, and the
Effects of its Pressure
and Resistance, for the
Use of the Human Body. |
| III. OPTICS, OR
The Nature and Properties
of Light, and the
Effects of its Refraction
and Reflection, for the
Use of the Human Body. | IV. ACOUSTICS, OR
The Nature and Properties
of Sound, and the
Effects of its Vibration
and Propagation, for the
Use of the Human Body. |

By JOHN WALLIS, M.A. Fellow of the Royal Society.
LONDON: Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1686.

For a further Description of the Contents of this Book, see the Preface.
The Author's Design in writing this Book, was to give a clear and
familiar Account of the Principles of the several Branches of
Natural Philosophy, and to shew the Use and Application of
them to the Human Body, and to the several Parts of the
Universe.

Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1686.

To the Young Student in P H Y S I C K.



T must be allow'd there are a considerable Number of excellent Books in the Art of Physick already published; but there is none, that we know of, that has had a proper Regard to the Improvement of the young Pupil. Most of our Physical Writers seem to write for such as are thoroughly grounded in the Rudiments or Principles of the Art, whereby the *Tyro* is left greatly at a Loss, and very often never gains a thorough Knowledge of its Principles; so that all he practises afterwards, is as it were by Rote, following only such Forms and Prescriptions, as he has either read in

ii P R E F A C E.

Authors, or seen practised ; without understanding in what Manner they act, which is the precise and critical Time for applying them, what End is proposed to be answered, what Alteration is necessary to be made in them, and the like ; whereby too many fatal Mistakes are committed : Add to this, they are very seldom capable of discoursing on the Art, or giving the Patient, or the Standers by, the Satisfaction of believing that they understand what they are about ; and yet this is a Point of no little Importance, with regard to a Man's first making his Way into the World. Were we about to build a House, we should be inclined to employ that Architect whom, upon any Occasion, we had heard discourse Rationally (as far as our Understanding of the Subject reach'd) on the Principles of Architecture ; and so in every other Employment, much more then in so important a Concern as that of our Health

Health and Life, are we prejudiced in Favour of that Person, who can give an intelligible Account of the Human Oeconomy, the Reasons of its Disorders, and the Power of Medicines.

What we have said above is the Case, even in *London* itself, much more in the Country. The main Design of this Work is, to give the young Pupil a thorough Insight into the Grounds and Principles of the Art, whereby he will be enabled to perceive the Meaning and Reasons of all he sees practised during his Apprenticeship; and to form a true Judgment when, why, and how far the like is to be done in similar Cases in his future Practice on his own Bottom. So that we may venture to affirm, that a careful Study of this Book, will give him a truer Knowledge of the Art, than perhaps, a seven Years Apprenticeship. And how much a better Figure he will

will make when he sets up for himself; how much sooner he will gain a Reputation of Knowledge in his Business; how much better he will be enabled to answer the Expectations of his Patient, and satisfy himself in the Course of his Proceedings; from being grounded in the Principles and Rudiments of Physick, than from a mere Transcript of Recipes only, is too evident to be in the least doubted of.

That great Physician *Zypæus*, one of the most celebrated of the Royal Academy at *Paris*, first drew up this BOOK for the Use and Instruction of his private Pupils, of whom Dr. *Groenvelt* was one, who ascribed his future Practice and Reputation to this excellent Foundation of Rudiments; and published them (as he declares in his Preface) solely to communicate to others that, from which he had reap'd the greatest Use and Advantage himself.

As

P R E F A C E. v

As a very extensive Landskip, or a large Palace, may be very exactly and beautifully represented by a skilful Pencil on a small Tablet, so, a great deal of Learning, and good Sense (if laid out with Art and Judgment) may be comprised in a small Volume; and all that is necessary to be known in the Art of Physick, an Art so essential to the true Enjoyment of Life! may be rendered short, easy, and intelligible.

For this Purpose the Antients formed many Systems, of which sometimes one, and then another prevailed; but they are not only so very Voluminous, that much, and great Application is required to read them over, but they have been wrote at such a Distance of Time, that in the present Age, they must be allow'd to be of no real Use; especially when so many new Discoveries in Anatomy, and the true Mechanism of the human Body, with many Experiments

Experiments brought daily into Practice, has, with the greatest Reason, altered both the Theory and Practice, deliver'd us down by the antient Physicians.

Moreover all their Systems were so rigidly accommodated to the particular Problems of Philosophy then in Vogue, that no Benefit can be received from them, unless the Reader entirely devotes himself to those Problems, from whence that System which he intends to study was formed: If he acts otherwise all Means of Conviction are lost, and he can never understand what he reads.

The Work before us removes all these Difficulties, by not only delivering the Theory of Physick from the Errors, and Ignorance of any particular Sect of Philosophers, but by establishing it on Demonstration, and a plain Method of Reasoning.

On this Foundation alone Things appear in their true and genuine
Light,

Light, and Dr. *Groenvelt* by a most happy Genius, has contracted the whole Substance of Physick into so small a Compendium, that he hath rendered the Study of it both easy and pleasant.

For the Benefit of the young Student an APPENDIX is added, containing the Method of Cure in several Diseases.

The Reader will in the Course of this Work, meet with many Things that may give him Pleasure, either for their Usefulness, or for the Manner in which they are treated of, on which Account the Perusal will pass the more agreeably on; and not only the Pupil, but even the old Practitioner may reap Benefit from it.

How necessary a fundamental Theory is to constitute an able Physician, appears from that just Observation of *Hippocrates*, quoted by Dr. *Mead* in his Treatise *De Imperio Solis et Lunæ*. "That tho' an igno-

“ rant Practitioner in Phyſick may
 “ act under favourable Circum-
 “ ſtances, in the ſame Manner as an
 “ unſkilful Mariner may ſteer the
 “ Ship, while the Sea is ſmooth and
 “ the Gale according to their Wiſh;
 “ yet when a Storm ariſes, and Dan-
 “ gers ſurround them on every Side,
 “ their Unſkilfulneſs ſoon appears,
 “ and being quite at a Loſs how to
 “ act on theſe Occaſions, thoſe un-
 “ der their Care periſh through
 “ their Ignorance.

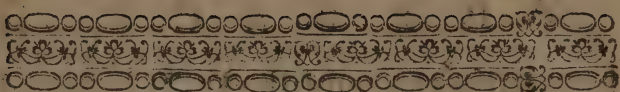
It may eaſily be perceiv'd, that
 this Book is none of thoſe ſo juſtly
 complain'd of, conſiſting of a mere
 Repetition of others, or a Collection
 of Recipes only, without teaching the
 Grounds of the Science, leaving the
 Reader as ignorant of the true Na-
 ture of Phyſick, as he was before; on
 the contrary, there has been nothing
 yet of this Kind in our Language,
 and its Uſe to young Pupils eſpeci-
 ally, exceeds any Thing that has
 been

been hitherto published. It is hoped that the Book has been improved in the Translation, as in several Places some useful Observations have been added by Way of Notes.

That the young Practitioner may diligently peruse and profit from what is so much calculated for his Benefit, is earnestly wish'd (as a Lover of the Science) by the

TRANSLATOR.

A TABLE



A
T A B L E
O F
C O N T E N T S.

THE first Part of the Principles of Physick, or Physiology	17
Of the Elements of Physick	24
Of Temperament in General, and some of its Species	28
Of the Economy of the Human Body	31
Of the Temperament of particular Parts, and the Signs of Temperament	36
Of the Natural Heat, and Vital Warmth	38
Of the Humours	42
Of the Excrementitious Humours in General	49
Of the Milk	50
Of the Seed	54
Of the Menstruous Blood	63
Of the Saliva	69
Of the Pancreatic Juice	72
Of the Natural Melancholly Humour	74
Of the Serum of the Blood	76
Of the Humour of the Pericardium	77
Of the Lympha	78
Of the Intestinal Mucus	80
Of the Sweat	81
Of the Urine	83
Of the Tears, &c.	87
Of the Lochia	88
Of the Water in Child Birth	89
The	

The Second Part of PHYSIOLOGY.

Of the Spirits, and the different Species of them in General	91
Of the Parts in General	97
Of the Kinds of natural Action ; and first of Hunger and Thirst	101
Of Sanguification	105
Of the Circulation of the Blood	107
Of the Motion of the Heart	113
Of the Pulse	117
Of the Motion of the Brain	119
Of the Generation of Spirits	121
Of Respiration	122
Of the Peristaltic Motion of the Stomach and Bowels	129
Of Nutrition	130

Part the Second; **HYGIENA**: Or that
Branch of it which treats of Health, and the pro-
per Means of preserving it.

O F the Non-naturals	131
Of the Air	134
Of Meat and Drink	140
Of Sleep and Watching	149
Of Motion and Rest	155
Of the Excretions and Retentions	157
Of the Affections of the Mind	160

PATHOLOGY: Or, the Third Part of the *Rudiments of Physick*.

O F the Things contrary to Nature	171
Of a Disease	176
Of an universal, and of a particular Disease	178
Of Diseases contagious, and not contagious	179
Of	179

Of pandemical, epidemical, endemical, and sporadic Diseases	184
Of a short, and a long Disease ; of the acute, and not acute	186
Of benign and malignant Diseases	188
Of great and little Diseases	189
Of a primary Disease, <i>i. e.</i> by Idiopathy, and of a secondary Disease, or by Sympathy	191
Of hereditary Diseases, and those not hereditary	192
Of the several Stages of a Disease ; of a Paroxysm, a Period, a Type, and of a Relapse	196
Of the Cause of a Disease, and its several Kinds	199
Of a Plethora, Cacochymia, and Flatulence	202
Of a Symptom	205
Of an Action injur'd	206
Of the Defects of Excretions and Retentions	208

The Fourth, or SEMEIOTICAL Part of
the *Rudiments of Physick.*

OF a medical Sign in General; and of some of its Species	211
Of the Knowledge of a Disease, from four Signs	213
Of the Knowledge of the Cause of a Disease	ibid
Of the Knowledge of the Part affected	214
Of the Crisis, critical Days, and their Signs	216
Of the Pulse, considered as a Sign	217
Of the Pulse peculiar to different Temperaments, Ages, Sexes, &c.	219
Of the Urine, considered as a Sign	220
Of the Colour of the Urine	222
Of the Smell and Taste of the Urine	225
Of the Quantity of the Urine	227
Of the Consistence of the Urine	228
Of the Contents of the Urine	230

The Fifth, or THERAPEUTIC Part of
the *Rudiments of Physick.*

OF the Indication ; and of the Indicate	234
Of the Method of Living	236
Of Blood-Letting. or Venæ-Section	241
Of the Section of an Artery	250
Of Leaches	252
Of Cupping Instruments	253
Of Frictions	256
Of Ligatures	258
Of the actual Cautery	ibid
Of Caustics, and Blisters	259
Of Issues and Setons	260
Of Suppositories	262
Of a Glyster	263
Of Vomitive, or Emetic Medicines	265
Of Purgatives	267
Of Alexipharmics and Sudorifics	275
Of Diuretics, or Medicines that promote Urine	277
Of Expectorating Medicines	278
Of Medicines that promote Salivation, Apophlegmatisms, Errhines, or medical Snuffs	279
Of Sternutatories, or Medicines that cause Sneezing	281
Of Medicines that promote the Menfes, and Venery ; that generate Seed, and Milk, and expel the Fœtus, and Secundines.	283
Of Medicines that dissolve the Stone in the Bladder, disperse Flatulencies, and kill Worms	285
Of Medicines procuring Sleep, and mitigating Pain	286
Of Cordials, or Medicines recruiting the Spirits	287
Of the Manner of Acting of various other Medicines	289
Of Medicines that are appropriated to a particular Part and Disease, and how they act	296

The A P P E N D I X.

OF an Apoplexy	I
Of an Epilepsy	8
Of a Nausea	II
	Of

xiv C O N T E N T S.

Of Obstructions	13
Of the Diseases of Virgins	15
Of a Diarrhæa	19
Of a Dropsy	21
Of the Venereal Disease	31
Of Fevers in General	36
Febrile Coldness	51
A Febrile Tremor	53
Febrile Anxiety	55
Of ardent Fevers	59
Of intermitting Fevers	62
Of the Small Pox	70
Of the Scurvy	85
Of the Rheumatism	91

A U T H O R S quoted in this Work.

Baglivi	Hippocrates
Bidloo	Lower
Bellinus	Mayern
Blafius	Malpighi
Bartholine	Mead
Borellus	Morton
Boerhaave	Needham
Celsus	Paracelsus
Cartesi u	Pitcairn
Charleton	Riverius
Cheyne	Sanctorius
Cowper	Schneider
Friend	Schroder
De Graaf	Steno
Gliffon	Sennertius
Diembroeck	Sylvius
Ent	Tulpus
Etmuller	Vesalius
Fernelius	Veslingius
Galen	Wharton
Harvey	Willis
Helmont	Zypæus



THE
RUDIMENTS
OF
PHYSICK.

CHAP. I.

*The First Part of the Principles of
Physick, or Physiology.*

Question.

WHAT is Physick?



Answer. Physick is the Art of preserving Health, and restoring it, when lost; or it is that Science (as you will see in the following Treatise) by the Knowledge of which Life and Health are preserved, or lost Health restored.

Q. From whence does Physick derive its Origin?

C

A. From

18 *The Rudiments of Physick.*

A. From the Diseases which have happened to Men, from the Nature of our Food, from the Actions of Life, and from the Construction itself of the human Frame.

Q. What Account have we of Physick from ancient History?

A. It relates that the *Chaldeans*, and the Eastern *Magi*, first cultivated the Art of Physick for this End, that they might cure present Distempers, and prevent those which might happen to Mankind.

Q. What Progress did Physick make in the World?

A. From it's first Rise it spread into *Egypt*, from thence into *Greece*, and flourished more particularly in the Islands of *Cnidos*, *Goos*, and *Rhodes*.

Q. From whence may we derive the first Rudiments of Physick?

A. The first Rudiments of the Art are owing to Chance, to natural Instinct, and to unforeseen Events.

Q. Into how many Parts is Physick divided?

A. Into five, distinguished by the following Titles:

Physiology, or the Nature and Principles of Physick.

Hygeiæne, or that particular Branch of Medicine which treats of Health, and discovers proper Means and Remedies for the Preservation of it.

Pathology,

The Rudiments of Physick. 19

Pathology, or that Part of Medicine which considers Diseases, both of Body and Mind, their Natures, Causes, Symptoms, &c.

Semejotice, or that Part which considers the Signs and Indications of Health and Disease, which enables the Physician to know the Rise, Progress, and Event, of each particular Malady, and to foretel whether it may end in Death, or Recovery.

Therapeutice, or that Part of Medicine which is employed in seeking out Remedies, and prescribing and applying them to effect a Cure.

Q. To what is the Progress of Medicine owing?

A. It is owing to the Remembrance of it's Effects; for the Diseases were described upon Tables, containing also an Account of the Cures, and these were hung up in the Temples of the Gods; the Sick were exposed in the Streets, and Places of publick Resort, that they might be informed of the Methods taken by those who had been cured in the like Cases.

Q. How did the Art arrive at greater Perfection?

A. From those who first made Physick their Profession, from their accurate Remarks on Diseases, and more diligent Observation and Application of Remedies.

Q. What do you infer from the preceding Remarks?

20 *The Rudiments of Physick.*

A. That the Practice of Physick was originally derived from the most exact Collection of Experiments; and afterwards improved, from considering the Nature of various Cures, by the Laws of Reason: The first Part was always the same by Necessity, Use, and Evidence; the latter variable, and changing in almost every Part.

Q. What is the End of Physick?

A. The chief End of Physick is Health; and next to this, the Mitigation of the Symptoms: Present Health is to be preserved by Physick; if lost, to be recovered by it; the first of these is called the Hygeiencic, the other the Therapeutic Part.

N. B. It is not to be objected, that there are some Diseases incurable, because the Physician does not pretend to cure such, they being out of the Sphere of his Action; nevertheless, he may describe them, not as Subjects of his Art, but that they may be distinguished and foreseen, for the Honour of the Physician.

Q. I desire you would more fully explain these Things.

A. The End of Physick is the avoiding of Pain, Disease, and Death; accordingly it is the Means of preserving present Health, and of restoring it when lost; therefore whatever is to be known or done in this Art, ought to be directed solely to this End.

Q. What is the Object of Physick?

A. Man;

The Rudiments of Physick. 21

A. Man; that is, his Life, Health, Diseases, their Causes, from whence they arise, and the Means by which they are governed.

Q. What was it proved, afterwards, a great Advantage to Physick?

A. Anatomy; by which the Causes of Health and Diseases were sought out with great Diligence; their Beginning, Encrease, Crisis, Declension, and final Periods, described through their several Stages: Anatomy shews the Body consists of two Parts, the Solids, and Fluids.

Q. What are the solid Parts?

A. The solid Parts are the Vessels through which the Fluids move, or Mechanical Instruments, consisting of Bones and Cartilages; all the Fluids are contained in those Vessels, and are moved in them.

Q. What do you observe further?

A. The Choice, Preparation, Application, Power, and Success of Medicines, were observed. *Democritus*, who lived in the Time of *Hippocrates*, spent his whole Time in opening live Animals.

Q. Did Physick continue long in the same State after *Hippocrates*?

A. Far from it; for, after the Time of *Hippocrates*, Physicians divided themselves into various Sects, distinguished by different Appellations: Thus the Followers of *Thessalus* were called Methodists; *Heracleon*, and his Disciples, Empyrics; till *Galen*, who strenuously

22 *The Rudiments of Physick.*

ously opposed all these Sects, reduced Physick into a more correct Method.

Q. How long did the *Galenic* Method continue?

A. To the Time of the *Arabians*, who established a School of Physick in *Africa*; they only interpreted the Doctrine of *Galen*, and were followed for some Ages.

Q. How was their Doctrine at length amended and refuted; in what Place, and by what Means?

A. The Doctrine of *Hippocrates* was revived in the Academies of *France*, by the Experiments of Chymists, chiefly of *Paracelsus*, afterwards of *Helmont*, and others.

Q. How is Physick cultivated in the present Age?

A. Of late Years it is improved with the greatest Pains, by Observations made in Mechanics, Natural Philosophy, and Chymistry, without Regard to any particular Sect.

Q. How many are the Means by which this Art is acquired?

A. They are two, *viz.* Observation and Reasoning.

Q. What do you understand, by Observation?

A. It is the Observation of all Things in the human Body, either well, sick, dying, or dead, as well in Respect of those Things which happen from internal Causes, as of those

those Things which are produced from external Causes by Art, Accident, &c.

Q. What do you understand by Reasoning?

A. It is an accurate Observation, by which those Things which pass in the human Body, unobservable by the Senses, are discovered and demonstrated: For which End, the given Experiments, being separately considered and compared together, all Things are to be remarked, which may plainly be deduced from thence by Reason and Experience.

Q. What is the Number of Things, called Natural, in Physick?

A. They are seven, viz. the Elements; the Temperaments; the Humours; the Spirits; the Parts; the Faculties; the Actions.

Q. What is the Number of Things, called Non-naturals?

A. They are six, viz. the Air; Food; Motion and Rest; Sleeping and Watching; the Excretions and Retentions of the Body; and the Passions of the Mind.

Q. How many Things are there contrary to Nature?

A. There are three, viz. Disease; the Cause of Disease; and the Symptoms of Disease. On these three Articles depends the whole Art of Physick.

C H A P. II.

Of the Elements of Physick.

Q. **W**HAT are the Elements?

A. The Elements are unmix'd Bodies, out of which all other Bodies visible, in this World, are first compos'd, and into which they finally return. The Union, or Conjunction, of the Elements in a Body, is called *Mixtio*, or a Joining together, as the Body, thus formed out of the Elements, is called a mix'd Body.

I agree with the modern Philosophers in making three Elements, *viz.* Æther, or a subtile Matter, or first Element, which consists of the finest and most subtile Particles, perpetually moved and agitated, infinitely small, some of which are less than others, *ad infinitum*, it is purer in the Sun, and in the fixed Stars, than in our Culinary Fires, which are composed of this Element; it is to be found in the Pores of almost all Bodies, and flows through them continually, like another Ocean upon the Earth, it exerts its Power upon all Bodies, which it does not freely pervade; and hence is the Cause of Fermentation in Liquids; and, perhaps, Electricity, which is so much talk'd of, and so little understood.

This

The Rudiments of Physick. 25

This subtile Matter is the Cause of Cold and Heat; for, by agitating certain Corpuscles, and by impelling them more violently upon the small Fibres of our Nerves, it causes in us the Sense of Heat; as, on the Contrary, the Sense of Cold is excited in us when the small Fibres of our Nerves are moved by Bodies less agitated by this subtile Matter.

This subtile Matter is of three Kinds; the first shines, and is hot, as in the Flame of a Candle; the second shines not, but is hot as in Lime, mix'd with Water, also as in our Blood; the third shines without Heat, as in Amber, some Worms, Sea-Fish, rotten Wood, and other Things shining in the Dark, which, on this Account, are called *Noctiluca*.

The Second Species, is the Second Element, or Ætherial, or Celestial Globules, which are certain round Particles, very smooth and small, but larger than the Particles of the first Element; which, according to their various Impulse on the Drum of the Ear, excite in us the Sense of Hearing, whilst these ætherial Globules are emitted from a luminous Body, and are impelled upon the Fibres of the optic Nerves, a certain Motion is instantly produced upon them, which is convey'd to the Seat of the Mind, which excites a certain Sense in us, which is called Sight; and that differing according to the various Motion of the Globules in Lines, or Rays, and according to the Diversity of the Diaphanous Body, or Light of

26 *The Rudiments of Physick.*

the transmitting Colour, carried by the Help of the Globules to the Bottom of the Eye, and from thence, through the Optic Nerves, determine the Mind to see this or that colour'd Object.

Lastly, The third Element, or earthly Matter, consists of small Particles, but larger than those of the first and second Element.

Aristotle makes four Elements, which are Fire, Air, Water, and Earth.

It is sufficient for the Physician to know, that our Bodies consist originally of Particles, very different in Size and Figure, *viz.* thick, small, heavy, light, soft, hard flexible, rigid, acute, ramose, &c. The Chymists make all consist of Salt, Sulphur, and Mercury, seeing these Things may be extracted from most Bodies by the Force of Fire; but Gold, burnt Talc, and Glass, cannot be reduced into these three Principles, or scarcely into any one of them, by any Degree of Fire whatsoever.

So, human Blood may be resolv'd into Phlegm, Salt, Oil, Spirit, and Earth; the same may be done by Harts-horn; though Salt, Sulphur, and Mercury, may be extracted from some Bodies by Fire, it does not follow from thence, that they were the first Principles of them; for, perhaps, they were produced by the Force of the Fire; and, besides, they are not entirely unmix'd Bodies.

C H A P. III.

I Shall add some Things which relate to Physick, and are taken from the Consideration of the Elements.

Our Bodies would soon decay, if they were not daily supply'd with what we take inwardly; as appears plainly to the Senses. Experience will teach us, that this Change of Food into the Substance of our Bodies, is more easily effected by varying the several Kinds of Nourishment, and the several Ways of preparing them.

Hygeiæne, which treats of Health, and the proper Means of preserving it, will teach us Variety of Foods and Liquors are necessary: In Fruits there is scarce any Preparation, but Maturation, either by Nature or Art. The Effects of all these Preparations, is the Separation of the Parts, and a more proper Disposition of them to Fluidity, for the better Nourishment.

C H A P. IV.

*Of Temperament in General, and
some of its Species.*

Q. **W**HAT is Temperament in General?

A. Temperament, in general, is a convenient Proportion of the Elements in themselves, and their Contexture in sensible Bodies.

Q. How is Quality divided?

A. It is divided into first and second Qualities: Amongst the first Qualities, and most considerable, these four are considered; Heat, Cold, Moisture, and Dryness, of which that Quality which predominates, denominates the Temperament.

Q. How many Divisions do you make in the first Quality?

A. Two; one is first in Action, which immediately affects us in the first Contact; the other is first in Power. The first Kinds are, the Heat of common Fire; the Cold of Water. The Changes of these may be observed; and these Things being changed, compose the Body of Man: Those Things which are taken to sustain the Body, are solid, or liquid; and accordingly eaten, or drank; the first Matter of these is Water, and the natural Produce of the Earth; this appears by Sacred and Profane History,

History, and from Nature itself. Then the solid Parts of Animals, and some Fluid, with Vegetables, are prepared for our Food; and, indeed, some Nations have lived intirely upon Vegetables; *Nebuchadnezzar* eat nothing but Grass.

Q. What do you infer from hence?

A. As Man makes use of all these Things, either mix'd, or separate, raw, or prepared; and as, by their Use, he lives and supports himself; and as, in such a Variety of Diet, the sensible Qualities scarcely differ; it follows, that all these Products of the Earth, and Sea, may be changed into the liquid and solid Parts of Man.

Q. I desire you would explain, mechanically, those Qualities which you mention.

A. The first Quality is in Power, as Heat in Pepper, Cold in Lettuce, &c. Actual Heat, is a strong, quick, and confused Motion (as in the actual Burning) of the insensible Parts of the Body: Actual Cold, *a parte rei*, is a Privation of the same Motion: Potential Heat, *a parte rei*, is such a Disposition of the Particles in any Body, that, upon touching our Bodies, makes such Pores, that the Æther, or subtle Matter, moves itself in them more strongly, and excites Heat, as the Heat in Pepper; whence those Things heat us which produce a quick and confused Motion in our Particles: Potential Cold, *a parte rei*, is such a Disposition of the Particles in any Thing, that,

30 *The Rudiments of Physick.*

that, upon the touching our Bodies, makes such Pores, that the Æther, or subtile Matter, moves in them in a weaker Manner, and excites cold, as the Coldness in a Lettuce; whence those Things produce Cold in us which can resist, diminish, or rectify the quick and confused Motion in our Particles.

That Heat is the aforefaid Motion, and Cold the Privation of it, appears from hence; that wherever such Motion is, there is Heat; and, where it is absent, there is Cold.

A partial Temperament, is that which is peculiar to any Part, as the Temperament of the Brain, of the Heart, &c.

A total Temperament, is that which being made up of several Parts, is ascribed to the Whole, as the Temperament of the Whole.

Lastly, Temperament is divided into native and acquired: The native Temperament, is that which every Person receives at his Birth: The acquired Temperament, is that which happens in a Course of Years, by the Non-naturals, or Contra-naturals.

The native Temperament does not absolutely remain the same during the whole Time of Life; and yet it may, through the Equality of the Non-naturals; still this remains longer than the acquired Temperament, because it is deeper rooted; and if, by the meeting with Contraries, it is not quite destroyed, it never gives way, or soon recovers itself;

itself; whence it is very difficultly lost in Children.

The native Temperament resides chiefly in the Blood and Spirits, to which the other Parts owe their Temper.

C H A P. V.

Of the Oeconomy of the human Body.

WHILE we treat of Physiology, it will not be improper further to describe the Oeconomy of the human Body. In the End of the Third Chapter, I mentioned the Secretion of the grosser Parts; for the better understanding of which, I shall explain the new Form the Food receives from the Organs of the Mouth: This is chiefly effected by biting and chewing, which is performed in the following Manner.

1. By the drawing down the Lower-Jaw from the Upper, by the Contraction of the two slender, oblong, biventer Muscles, which arise from the upper Part of the Processus Mastoideus, and end at the Styloformes in a round Tendon, which passes through the Stylohyoideum and the annular Ligament fixed to the Os Hyais, and from hence, by a new
Belly,

32 *The Rudiments of Physick.*

Belly, descends into the Medium Internum of the Bottom of the Chin. (*Vesf. L. 2. T. 5. Litt. H. 1.*)

2. By the compressing and drawing up of the Lower-Jaw to the Upper by contracting the Muscles as follows.

1. Of the Temporal Muscles, which arising from the Bones of the Vertex, Forehead and Temples, insert themselves with a strong, wedge-like, and short Tendon, into the upper acute Processes of the Lower-Jaw. (*Vesfal. L. 2. T. 5. L. B.*)

2. Of the Masseter Muscles, which are triangular, thick, short Muscles, arising from the Os Jugale, and the Upper-Jaw-Bone, at the lesser Angle of the Eye, from whence they run out to the Ear, and fix their Tendons to the inner Edge of the Lower-Jaw. (*Vesfal. L. 2. T. 4. L. D.*)

3. The Food being broke by the Dentes Incisores, is taken into the Mouth by the gentle Compression of the Muscles of the Lips and Cheeks against the Jaws, chiefly by the Help of the Sphincter of the Lips, and of the Buccinator (*Vesfal L. 2. T. 4. Lit. M. N.*) Then, by the Help of the Tongue, moved by its Muscles (*Malpigijs de Lingua*) is confined and turned upon the broad, unequal, concave, acuminated Surface of the Dentes Molares, where, being detained, it is pressed, ground, and attenuated, by the Motion of the Lower-Jaw; to which Effects concur, first, the compressing Motion; secondly, the Motion forward,

forward, by the Help of the outward Pterygoidei, which arising from the outward Part of the Alæ Vespertilionum, going backwards, are inserted between the Processus Condyliformis, and the Corona (*Vesling. Tab. Cap. xiii. Fig. 11. Lit. E. E.*) and by the Help of various Fibres in the Temporal and Masseter Muscles. Thirdly, The Motion backwards, by various Fibres of the Temporal, Masseter, and Biventer Muscles, acting by a determined Concurrence. Fourthly, The lateral Motion which is performed by the inward Pterygoidei, which arising from the inward Part of the Processus Vespertilionum, are inserted by a strong Tendon to the back Part of the Lower Jaw, about the Angle (*Vesal. L. 2. T. 6. L. D.*) but the Effects may be varied by the various Concurrence of the several Agents. Thus the Food is ground, and is directed between the Molares, by the Tongue, and the various Parts of it exposed to various Triturations, and so Mastication, or Chewing, is perform'd. By this Motion of Mastication such Changes happen in the Food (as in the last Paragraph of the Chapter on the Elements.) But many other Parts of the Mouth are necessary to be known.

Near the Parotid Conglomerate Gland there is another Conglobate Gland, from which the Saliva flows into the Mouth, the Duct opening in the Cheeks, about the third Upper Great Tooth (*Steno Observat. Anat.*) and from

34 *The Rudiments of Physick.*

the Maxillary Glands (*Wharton C. 21.*) and from the Sublingual Glands of Bartholine (*Philos. Transact.*) the Saliva and Mucus of the Palate and Jaws do also distil (*Schnieder de Catarrh. Lib. 3. S. 2. C. III. Fig. 2, 3, 4.*) which never fails in healthy Persons. While contained in the Mouth, the Saliva is very spumous, and in Hunger is more copious, fluid, and acrid; in those that fast, it has a very detergent Quality, taking away Pimples, Scars, and Spots; and being mix'd with Paste, makes it ferment; being mix'd with the Juice of Vegetables, it makes them ferment, and changes them into inflamable Spirits; it is swallowed by Brute Animals, by Persons that sleep, and by those that enjoy Health.

A voluntary Spitting in Excess, occasions an *ανορεξία **, *δυσπεψία*, *ἀργοψία* the Saliva in sound Persons is tasteless, and consists of Water, Salt, and Spirit, which may be found by a Chymical Exhalation.

The Motion of Mastication attenuates the Food, and squeezing the Saliva from its Sources, mixes them together, the Saliva arising from the arterial Liquid, is like the Liquids flowing in our Vessels.

Therefore this Mixture helps,

1. To a Likeness of the Body to be nourished.

* The Disorders comprehended under these three Terms are, a Loss of Appetite, Nausea, Atrophy, &c.

2. To

2. To promote the mixing of the oleous with the watery Parts.
3. To dissolve the Salts.
4. To a kind of Fermentation.
5. To the Change of Taste and Smell.
6. To induce the intestine Motion.
7. To the present satisfying of Hunger.
8. To convey Tastes, as it is insipid itself.

The Saliva therefore, as it is useful to so many Purposes, and elaborated by so many artful Contrivances, is very wrongly rejected as an Excrement. By the Motion of Mastication, and mixing of the Saliva, the Air is mix'd with the Morsels of our Food, and by its native Elasticity, Fluidity, and Gravity excited by the Heat of the Body, and differing every Moment by the various Pressure, prepares, attenuates, renders fluid, and gives intestine Motion to the masticated Mass.

Voracious and very hungry Animals don't chew much, but by a long Mastication of the Food, the Chyle is kept more in the Mouth, and Hunger is much sooner appeas'd; from whence it is plain, that this Action is very necessary and wholesome.

C H A P. VI.

Of the Temperament of particular Parts, and the Signs of Temperament.

Q. OF what Quality are the Parts of a Body?

A. Every Part of a Body, in Regard to itself, is hot and moist; for these Qualities are necessary to Life; but being compared with each other, they are so different, that some of them are rightly called hot, cold, moist, and dry. In Pursuance of this Method, these are reckoned hot, as the Heart, the Blood, the Spirits, the Arteries, the Veins, the Lungs, the Spleen, the Liver, &c. The Heart is of the warmest Quality, the Spirits are not; for, although they move with great Celerity, yet they do not move vehemently, and with any Thickness, as is necessary to Heat, otherwise the Nerves would be of the warmest Quality.

The cold Parts are, the Bones, Cartilages, Tendons, Membranes, Ligaments, the Spinal Marrow, &c.

The Temperament is also different, according to the Difference of Sex and Age.

Q. What is the Sex.

A. It is a Modification, arising from the different Formation and Temper of the Genital Parts.

Q. How

Q. How do you distinguish the Sexes?

A. Into Male and Female.

Q. Which is the hotter?

A. The former; yet, I confess, some Viragoes are hotter than the Males.

Q. What is Age?

A. Age is a Part of the Time of human Life, in which some remarkable Change is observed. The Cause of the several Ages, is the various Proportion of native Heat, from that Time of Life, proceeding from the seven Naturals, or the Contra-naturals; from whence the several Ages are not always confined to the same Space of Time, or Number of Years, but happen to some sooner, to others later, for some grow old sooner than others.

Q. How are the Ages divided?

A. Into eight Parts; 1. Infancy extends to the 3d Year. 2. Childhood to the 10th Year. 3. Puberty to the 18th. 4. Adolescence to the 25th. 5. Youth to the 35th. 6. Virility to the 50th. 7. Old Age to the 60th. 8. Decrepit old Age comprehends the rest of Life.

Q. How is old Age preserved?

A. By Foods that are strongly nourishing, and by generous Wines, which may support the decay'd Heat.

C H A P. VII.

Of Natural Heat, and Vital Warmth.

HA V I N G finished what I have to say on Temperament, it will be proper to add something concerning our natural Heat, according to the Difference, of which we shall also find a great Difference of Temperament.

Q. What is our Natural Heat?

A. Our Natural Heat is nothing more than a swift and confused Motion of the subtile Matter, or of a small Fire, without Light (such as is perceived in quick Lime mix'd with Water, in the various Fermentations of Chymists, in Horse-Dung, and in Herbs putrifying in a Heap) yet hot, and differing only in Degree from common Fire.

Q. Whence does this Motion arise?

A. This Motion arises because the subtile Matter, insinuating itself into the Blood, not finding a free Passage, but being obstructed thereby, must therefore exert its Power upon the Particles of the Blood, and agitate them confusedly; therefore, as it proceeds from the same Cause as Fermentation, as you will presently understand, and as the several Fermentations are performed by Heat, I judge it
right,

right, to ascribe our Natural Heat to the same Cause.

Q. What is Fermentation.

A. Fermentation is an intestine Motion amongst the heterogenous Parts of any Body, by which it is by some Means agitated, and grows full of Air.

Q. How is Fermentation effected?

A. Fermentation is performed in this Manner, because the subtile Matter passing thro' certain moist and fluid Bodies, meets and strikes upon certain rigid Particles, and less flexible, swimming in them; some not having the proper Particles, breed Confusion, and then the subtile Matter insinuates itself in greater Quantity into the Particles that may be fill'd, and so rarifies and exalts the said Bodies.

Q. Explain this Matter more fully.

A. In the same Manner as a certain Number of Men will take up more Space of Ground, if they are in a confused Motion, than if they stood still close together. This is frequently seen in humid Bodies, or which have some Particles mingled with others, gently moved amongst themselves.

Q. But what happens on the contrary?

A. If these Particles are moved amongst themselves more swiftly and confusedly, so much more Space do they require: We see this in Wine, which all the Winter hath *lain still* (vulgarly speaking) but has only had a smaller Motion of its Particles, in the Spring, when

40 *The Rudiments of Physick.*

when the Rays of the Sun grow more powerful, and therefore the Motion of the subtile Matter grows stronger (for Wine has its rigid, as well as tartarous and other Particles) the Vessel containing it would burst, if it had no Vent; therefore the Rarefaction of every Liquor is not properly Rarefaction, but only that which is caused by an internal Principle, or heterogenous Parts, or Dissimilitude of its Particles, by which the subtile Matter is oblig'd to press more strongly for a Passage; consequently that is not Fermentation in Water, or any other more homogeneous Body rarified by Fire, for such only boils from the Plenty of subtile Matter outwardly impelled on it, and not from an internal Cause.

2. How is Native Heat divided?

A. Into that implanted by Nature, and that which is continually flowing in; the first is what we receive at our Birth, the latter what leads the other into Action. Observe, that many distinguish Native Heat into these two Parts, as if there was some Native Heat implanted at our Birth in every Part, which continues the whole Time of Life.

But it appears from what has been said, that all Native Heat is in the Blood; so that the second Distinction is intirely without Foundation; especially as those who make these Distinctions confess, that Native Heat can do nothing of itself, but is put in Motion
by

The Rudiments of Physick. 41

by the other Principle, therefore has no Effect alone.

Q. How is Native Heat continued?

A. From the subtile Matter, which is produced from the Aliment, and carried to the Heart in the Chyle and Blood; therefore the Heart is the Seat of Native Heat.

Q. Does not the Native Heat encrease?

A. It encreases to the Time of Manhood, because, as we arrive nearer to it, so much the more it is freed from vapid Excretions, and, in breathing, it is better fann'd by the greater Motion of the Body, and is more augmented than in the Circulation of the Foetus.

Observe, that in the Foetus the whole Mass of Blood does not pass through both the Ventricles of the Heart, but is carried on by a different Mechanism. *Vid. Lower de Corde.*

Q. When is Heat first produced?

A. When the Soul is first joined to the Body sufficiently organized, which cannot be exactly determin'd, as then we begin our Existence; but if it is understood of our whole Matter, then it is elder than ourselves.

Q. What is Native Heat?

A. It is the oleous and fat Substance of our Bodies; the same is call'd the radical Moisture, and primogenial Moisture.

Q. What is Nature?

A. Nature is a due Motion of the Blood and Spirits; and a just Formation of the

F

Parts,

42 *The Rudiments of Physick.*

Parts, with Respect to the Pores, the contracting Fibres, the greater Passages, &c. for it is these Things only which expel all noxious Particles out of the Body, retain the Good, supply what is deficient, and perform all the Functions which are ascribed to Nature.

C H A P. VIII.

Of the Humours.

Q. **W**HAT is a Humour?

A. A Humour is a liquid, palpable Substance, produced in the Body from Food, according to Nature.

Q. Why is it called Liquid?

A. To distinguish it from the Faces and solid Parts.

Q. Why palpable?

A. To distinguish it from the Spirits, which is also a liquid Substance, but impalpable from its extreme Volatility.

Q. Why produc'd in the Body?

A. To distinguish it from Liquids newly taken.

Q. Why according to Nature?

A. That you may understand I do not speak here of preternatural Humours.

Q. What is the Chyle?

A. It

A. It is a certain Liquid Mass formed from the Food in the Stomach.

2. How is it carried out of the Stomach?

A. It is carried out of the Stomach, partly by the Muscles contracting the Abdomen, partly by the Impulse of the Liver, and, lastly, by the peristaltic Motion, or the vermicular, successive Contraction of the annular Fibres of the Stomach, from the upper Orifice to the lower, by which the Stomach is successively made narrower, and the Chyle is forwarded to the Pylorus, and the Intestines, to be further perfected.

2. How is Chyle produced?

A. At the Time of taking our Food, and also before and after: The Saliva is continually swallow'd; the Moisture of the *Æsophagus* continually distills; the Lymph of the Stomach, and the Remains of former Meals, are mix'd with the present Food we take; where, by Means of the digestive Heat, it is diluted, attenuated, &c. and render'd fit to be distributed to those Passages of the Body thro' which it is to flow.

2. What becomes of the Chyle when it arrives in the Bowels?

A. It is there further elaborated, as well by the Ferment which it carries with it out of the Stomach, as by the Gall and pancreatic Juice, which Juices meeting in the Duodenum, and being mix'd with the Chyle, ferment together, by which Means the Chyle is further

44 *The Rudiments of Physick.*

prepared, till it is thin enough to pass into the Lacteal Vessels.

Q. What are the Lacteal Vessels?

A. They are certain Vessels, innumerable, of a particular Kind, so small, that, unless they are full of Chyle, they are invisible, and which arise from every Part of the small Intestines, and enter the great, or central Gland, on every Side; but very few are found in the great Intestines.

N. B. These Lacteal Vessels are called Vessels of their Kind (*sui Generis*) or rather Vessels of the *first Kind*. In Respect of the Vessels that are formed of these, united into fewer and larger Pipes, which make a Reservoir, or larger Gland, which is the Beginning of the thoracic Duct. These are the Vessels of the *second Kind*.

Q. How are the Lacteal Vessels placed in the Bowels?

A. In the same Manner as the Ureters are inserted into the Bladder; *i. e.* the Lacteal Vessels do not enter the Intestines with open Mouths, but are placed obliquely between their Coats; so that the Lacteal Vessels do not admit the Air from the inflated Bowels.

Q. What becomes of the Chyle when it is lodged in the Bowels?

A. In all the Intestines the Cream of the Chyle, or its finer Parts (the grosser being retained) is conveyed to their Sides, or inner Surface, and is absorb'd by the Lacteal Vessels;

sels; and, that this may be the more conveniently done, it is thrust slowly forwards by the peristaltic Motion of the Bowels, from their Beginning to their End, the Valves of the Intestines assisting herein; and it is thus carried to be received by the Lacteal Vessels.

Q. How does the Chyle enter the Lacteal Vessels?

A. The Chyle does not enter the Lacteal Vessels with the peristaltic Motion, in the Way that many imagine; for that is performed by the Contraction of the transverse Fibres, by which, of Consequence, the Lacteal Vessels are shut.

Q. But in what Manner?

A. By the Pressure of the Abdomen, and the Descent of the Diaphragm, the Sides of the Bowels press the Chyle which they contain, and some Part of the Chyle passes into the spongy Coat of the Bowels, and is received by the Lacteal Vessels (supposing these Vessels not contracted at that Time, for then nothing would enter, though afterwards they may be contracted, for the peristaltic Motion is performed successively by the Contraction of the Fibres) and by the succeeding peristaltic Motion, part is pressed upwards, and part returns into the Bowels; therefore this Motion is rather fitted to promote the Motion of the Chyle already received into the Lacteals, than to receive it at its first Passage out of the Bowels.

Q. The

46 *The Rudiments of Physick.*

Q. The more noble Part of the Chyle being thus separated, what becomes of the grosser Parts?

A. They form the Fæces; which, though they are formed in all the Intestines, are chiefly so in the Colon and Rectum (as it happens in all Things where there is a Separation of the more noble from the ignoble Parts) for before the Chyle can arrive there, the greatest Part of it is imbib'd, and the Fæces excreted.

Q. What becomes of the Chyle when it hath enter'd the Lacteal Vessels?

A. It proceeds to the great Gland of the Mesentery, towards which all the Lacteal Vessels tend, as towards the Center, and is strained through it by winding Passages, perhaps, that it may move the slower thro' the Lacteals, and its whole Quantity obtain a quicker Motion through the thoracic Duct, if (as some affirm) the thoracic Duct would not be sufficient to receive the Chyle carried thither directly from so great a Number of Lacteal Vessels.

Q. By what Motion does the Chyle proceed to the common Receptacle?

A. The Chyle proceeds through the Lacteal Vessels of the Mesentery, and also thro' its great Gland, and to the Cistern, or common Receptacle of the Chyle, partly by the Motion received from the peristaltic Motion of the Bowels, partly from the continual Succession

Succeſſion of new Chyle, by which it is preſſed upwards; the Valves of the Lacteals preventing its Return, and their natural Propenſion to Conſtriction greatly aſſiſting herein, it arrives at the ſaid Receptacle.

Q. Where is this Cyſtern, or Receptacle, ſituated?

A. It is ſituated between the Tendons of the Diaphragm, in the Place where they are joined to the Spinal Bone, and receives lymphatic Veſſels from all the lower Parts, which are contained in the Bowels, that the Chyle might be diluted by their Lymph, for the more eaſy Paſſage thro' the thoracic Duct.

Q. What happens further to the Chyle in its Paſſage.

A. Becauſe the Chyle, with the Cauſes already aſſign'd for its Motion through the Lacteal Veins, would make its Way difficultly from the Bowels to the internal axillar Vein, into which the thoracic Duct is inſerted, and would be liable to coagulate, it receives a freſh Shock from the Diaphragm in the Miſt of its Paſſage, every Motion thereof ſhaking the Receptacle, by Means of its Tendons.

Q. Whither is the Chyle convey'd from the thoracic Duct?

A. It is convey'd directly to the ſubclavian Vein from the thoracic Duct, to which the ſaid Duct is inſerted ſometimes by ſeveral Mouths, and ſometimes by one larger, that the Blood may be mingled with the Chyle in the Vein afore-

48 *The Rudiments of Physick.*

aforementioned, and convey'd from it to the Vena Cava, and the Heart. Into this Duct flows all the Lymph of the whole Thorax. (*Vide Asell. & Wharton de Lact. Pecquet de duct. Thoracic. Lower in L. de Corde Cap. v.*

Q. Is the whole Chyle, thus mingled with the Blood, converted also into Blood?

A. The Chyle, thus mingled with the Blood, is not presently and intirely changed into Blood, for its Nature is so different from it, that it requires some Time to circulate, before it receives an intire Change.

Q. How prove you this?

A. It is confirm'd by Experience; for if you draw Blood from a Man, or any other Animal, five or six Hours after eating heartily, a certain milky Humour will float upon it, scarcely differing from that in the thoracic Duct, which can be no other than the Chyle, which floats in the Blood for a certain Time after eating, and then disappears, having acquired a red Colour.

CHAP.

C H A P. IX.

*Of the Excrementitious Humours
in General.*

Q. **W**HAT is an Excrementitious Humour?

A. It is a Humour which is, in its Nature, unfit to be converted into our Substance, in which it is generated.

Q. How is it divided?

A. Into natural and preternatural.

Q. Which is the natural?

A. That which has no hurtful Quality to our Nature.

Q. Which do you call preternatural?

A. The preternatural comes under the Head of Pathology, and is there considered.

Q. But how do you divide the natural Excrementitious Humour?

A. Into necessary and unnecessary.

Q. Which is, in its Nature, useful?

A. The natural Excrementitious Humour, is that which is applicable to some Use: As the Milk, the Seed, the menstruous Blood, the Blood that nourishes the Fœtus, the Gall, the Serum of the Blood, the Humour of the Pericordium, the acid, or digestive Humour of the Stomach, the Saliva, the pancreatic Juice, the Lympha, and intestinal Mucus.

G. Q. What

50 *The Rudiments of Physick.*

Q. What are the natural unnecessary Humours?

A. Those which are of no Service to the Body in which they are formed: As the Urine, Sweat, Tears, the Mucus of the Nose, the Blood in Child-Birth, the Waters in the same, the hemorrhoidal Blood, the Ear-Wax.

C H A P. X.

Of Milk.

Q. **W**HAT is Milk?

A. Milk is a Portion of the Chyle, separated in the milky Tubes, by the Glands of the Breasts, for the Nourishment of Children.

Q. What are the Lacteal Tubes?

A. They are Vessels proper to the Breasts, which arise from their innumerable Glandules, and terminate in the Nipples by many Openings.

Q. What is the Matter that makes Milk?

A. It is made of the Chyle, and not of the Blood.

Q. How do you prove it?

A. If the Nurse takes a purging Medicine, it presently mingles with the Milk, and purges the Infant; and sometimes it will purge the Infant only, and not the Nurse. Saffron, burnt

burnt Wine, and other Things, taken inwardly, communicate their Taste and Smell to the Milk in the Space of half an Hour. Besides, the Nurse, after a large Draught, presently feels something descend into the Breasts, with a Kind of Chilliness and Distention, which would not happen, if the Matter of Milk was Blood.

Q. By which Way is the Chyle conveyed to the Breasts?

A. It is by the thoracic Duct, from which certain small Branches, about the Claviculæ, or Shoulder Bones, are turned back towards the Breasts and Sternum.

Q. How do you prove this?

A. Because those Branches are distributed to the Breasts from the thoracic Duct, and the Receptacle of the Chyle, which is ingeniously demonstrated by *Bilsius*, in his Treatise on Secretion.

Q. Are these Passages yet discovered in Men?

A. They are not; but I am of Opinion, that these Passages are the Arteries, and that the Chyle, which is the Matter of Milk, flows to the Breasts with the Blood.

Q. Have Women Milk when they are with Child?

A. They generally have, some Days before their Delivery; not because the menstruous Blood, or that which nourishes the Fœtus, being now superfluous, flows back through the

52 *The Rudiments of Physick.*

epigastric Vessels to those of the Breast, but because in Women with Child, near the Time of Delivery, the Womb being greatly distended, presses upon the Blood Vessels of the lower Belly, and so the Blood returns upwards, and, by its Quantity and Heat, hath more Power to open the Pores of the Glands of the Breasts, and is the Cause that the *Tubuli Lactei* are enlarged, and changes the Blood into Milk.

Q. What happens further in respect of the Milk in Women with Child?

A. In such, the Receptacles of the Chyle being more compress'd, and the Chyle driven upwards, the Glandules of the Breasts, the Passages to them, and the lacteal Tubes, are hereby more opened.

Q. Why does the Milk flow more plentifully after the Birth?

A. Because, after the Birth, the Womb does not presently recover its former Figure; and the Chyle, which us'd to pass to the Womb for the Nourishment of the Fœtus, now, by the Passages being closed, flows upwards, and the Infant sucks; and how greatly this conduces to producing Milk, no one will wonder at, who reads, in the *History of Physick*, of an Instance where Milk was produc'd in the Breast of a Virgin, only by continued Suction.

Q. When does the Milk cease?

A. When

A. When the Infant leaves off sucking, and the lacteal Tubes are now closed, which before were kept open by the Motion of the Chyle towards the Nipples, and then the Passages of the Glandules grow narrower, so that the same Quantity of Chyle cannot pass thro' them, the free Passage which continued towards the Nipple, during the sucking of the Child, being now closed, and new Supplies arriving, which cannot freely enter the small Vessels of the Glandules, it is compell'd to repair to the Heart with the circulating Blood.

Q. From what other Cause does the Milk cease to flow in the Breasts?

A. When the Nurse is again with Child.

Q. How does this happen?

A. When the Womb grows softer and more porous, on account of the lesser Pressure, the Chyle then begins to return to the Foetus, and withdraws itself from the Breasts, till towards the due Time of Delivery the Womb is again distended, and sufficiently presses upon the chyliferous Vessels. The Mother then conveniently weans the Child; or the Child weans itself, because the Milk, from some unusual Mixture, has not its natural Taste.

C H A P. XI.

Of the Seed.

Q. **W**HAT are we to premise, before we treat of the Seed?

A. We are first to observe, that the Organs of Generation in Man and Woman are different.

Q. But would it not be better to mention these Things in another Place?

A. It will be better to defer it till we treat particularly of this Subject.

Q. What do you remark of the Seed?

A. It is a whitish Humour, full of Spirit, form'd in the Testes and Paraastatis, to be further fitted for Generation in the Seminal Vessels, and the *Vasa Deferentia*.

Q. Is the Seed generated of the Chyle, or the Blood, or of both?

A. The Seed is the nobler Part of the Chyle.

Q. I desire you would demonstrate this.

A. I will do it; the Matter from which the Chyle is made, is carried, with the Blood, directly from the Heart to the Testicles by the Arteries; the same is carried through the minutest Glands (only perceivable by a Microscope) into the tubulous Substance of the Testicles.

Q. How

Q. How is this confirmed?

A. From the artificial Division and Dispersion of the Arteries in the Testicles.

Q. What do you infer from hence?

A. From their Straitness, with the winding of the corresponding Veins, and the Multitude of their Valves, it follows, that the Chyle, joined with the Blood, moves with greater Celerity towards the Testes, than from them, and so the more noble Part of the Chyle more readily passes to form the Seed into the tubulous Substance of the Testicles, by the small Arteries and Glands, with which it every where abounds.

Q. What is the tubulous Substance of the Testicles?

A. It is a Collection of spermatic Vessels, knit up with various Folds and Windings, to which Form their Teguments greatly conduce; for, upon taking off the Teguments of one of the Testicles, and stirring it in Water, you will find these Vessels above twenty Ells long: Many Nerves surround these Teguments, which very much help the Translocation of the Chyle, by forcing the Blood towards the lower Parts, by the Influx of the Spirits, and by successively straitening the Cavities of the Vessels, and then the Blood that is unfit for Seed, passing through the Veins and the Lymphatic Vessels (which are bound up with the Blood Vessels) and also the watery Humour, impregnated with a volatile Spirit

56 *The Rudiments of Physick.*

Spirit (which accompanies the Chyle, for its more easy Transcolation) returns to the Heart.

Q. Some believe that the Matter of the Seed is a nervous Juice, that distils from the Brain; are you of this Opinion?

A. By no Means; notwithstanding the Number of Nerves in the Testicles; nor is their Reasoning of any Force, that the Loss of a considerable Quantity of Blood does not weaken like the Loss of a little Seed; nor that the Head aches after Copulation; nor that lustful Persons are subject to Distillations from the Brain to the Spinal Marrow; nor, lastly, because the Testicles are white within, and not red.

Q. How do you make good all these Assertions?

A. To the first I answer, that this nervous Juice is either the condensed animal Spirits, or some other Humour; but it is contrary to the Nature of a Spirit, which consists of Parts flying from each other, to be condens'd into a seminal Humour; and this nervous Juice cannot be any other Humour, because it would stop up the invisible Pores of the Nerves.

Q. What do you reply to the second Objection, from the Number of the Nerves?

A. To this I answer, that they are intended to convey the great Quantity of Spirits which are contained in the Seed, and without which the Chyle would not pass through those innumerable, and extremely small Tubes, which
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are in the Testicles, nor would be changed into a prolific Seed, which is perfected by the various Motion of the Spirits, and of its Particles within itself.

Q. What do you say to the next Objections in the 3d, 4th, and 5th Articles?

A. I say, that this may proceed from the Waste of Animal Spirits; for the Testicles being emptied, the Nerves that communicate with them are proportionally weakened, and then, by the greater Facility of the Motion towards them, the Spirits flow more abundantly into these Nerves than others, and so other Parts, and even the Brain itself, is robbed; whence it happens that its Fibres are relaxed, and this is the Reason that the Vapours of the Brain are more weakly condensed, and sent out through the Spine.

Q. What do you say to the last Article?

A. I say, that all the Parts (even from the Confession of those who differ from my Opinion) even the Testicles themselves, are nourished by the Chyle, since they are all, in some Degree, white.

Q. But to the Solution of the first Objection it may be reply'd, that the small Fibres of the Nerves are not obstructed by their own nutritious Juice, although of a grosser Nature: What do you reply to this?

A. This nutritious Juice is not derived from the Brain, but from the Arteries; nor does it fill the Pores of the Fibres by the Way of
H their

58 *The Rudiments of Physick.*

their Diameter, but by the Way of their Length, and so does not pass by the Way of the Spirits, and consequently cannot hinder their Passage; and this is the Reason that the Fibres of the Nerves grow only in Length.

Q. What do you say to those who assert, that the Matter of the Seed is a Part of the Blood, and that those who, by using Venery too freely, drain the spermatic Vessels, and weaken the Blood, do so straiten the Way to the Testicles (though what contributes to this, is the straiter Descent of the Arteries from the Trunk of the Aortæ to the Testicles, than to the Loins) that, deriving the Blood from the Loins, they fall into a *Tabes Dorsalis*, and emit Blood, instead of Seed; and, tho' they are weaker, yet are more inclined to Venery than the more moderate; but their Seed is less efficacious than that of others, who are not guilty of this Excess.

A. I will tell you; that the Matter of the Seed is the most labour'd and spirituous Part of the Chyle, greatly impregnated with a volatile Salt, by which we can truly explain all the Phænomena and Accidents of the Seed, which cannot be refuted by any Arguments; and that the Chyle, which abounds in the Blood more than all the other Humours (excepting the Serum) is the Matter principally necessary to true Nutrition, Accretion, the Generation of Blood, and the Production of Spirits, &c. Although any other Humour almost,

as

as was said elsewhere, according as it adheres to this or that Part, through a Conformity of Pores, may be said to be nutritious.

Q. Why is Seed first generated at the Time of Puberty?

A. Because the Heat of the Glands of the Testicles is then greater, opens more the Pores of the Vessels and Arteries, and circulates the Blood through them better, and the Nerves are more ready to supply Spirits, the Moisture being consum'd; for before that Time the Blood is more expended on the Growth of the Body, and the Heat and Pulse are too weak for the Blood to circulate thro' such winding Passages, and which are then less open.

Q. What do you gather from what has been said above?

A. That the Seed fails in old Men, and worn out Constitutions, the natural Heat failing, the spermatic Vessels being shrunk up, and destitute of laudable Blood.

Q. Does the Seed differ in Colour in different Places?

A. Yes; in the Tubes of the Testes, the Seed is more of an Ash-Colour, but whiter in the Head of the Epididimis.

Q. Describe the Way of the Seed, and the Manner of its Excretion.

A. The Seed being formed in the Testicles and Paraastatæ, is carried through a winding, and extreme small Passage, by the Vasa De-

60 *The Rudiments of Physick.*

ferentia, to the seminal Vessels, in which it is laid up, that it may be further wrought, until, by the Passions of the Mind, or by Titillation, the Nerves of the seminal Vessels, and the Fibres, being more inflated, they expel the Seed, then fuller of Spirit, into the Urethra, through the Eyes, or Passages, of the Head of the Gallus Gallinaceus, or a certain Gland so called, that shuts up, by its Concourse, the seminal Vessels: The Seed is sometimes excreted, as well as the Urine, from this Cause; that the Fibres, which shut up this Passage, are not sufficiently supplied with Spirits; and being thus relaxed, they do not close the excretory Ducts, which immediately happens to Persons who are seized with a great Fright.

Q Where is the Seed generated, and whence do Eunuchs receive Titillation?

A. The Seed is generated in the Testicles, and therefore Eunuchs have none, and yet they receive Titillation, from a certain warm, sluggish Humour, that distils from the Prostatae into the Urethra, by many Tubules, which Humor is not real Seed; for, in a Gonorrhea, it may be excreted a long Time, without producing any Weakness, serving merely to defend the Urethra from the Sharpness of the Urine.

Q Can Eunuchs generate?

A. They may have Seed enough, in the seminal Vessels, to impregnate a Woman; as it

it is sometimes reported of Oxen that have generated Calves; for it is certain, that it is not so much the Quantity, as a particular Spirituousness of the Seed, that is required for Generation, which is performed by the fructifying of the Ova in the Womb.

Q. Does the virile Semen strengthen the Body?

A. It does; because the genial Spirit that is in it partly enters the Veins, and is distributed to the Parts: And for as much as when it is formed, and remaining in its proper Seat, there is no Need of a new Supply of so many animal and vital Spirits to the Testicles, their Nerves, and the other Receptacles of the Seed, when, for the present, those Passages are full, and so the Spirits are not diverted from the Heart, the Brain, and other Parts.

Q. Have those who abstain from Venery a greater Quantity of Seed than others?

A. Not at all; for they who live chastly, do not form so large a Quantity of Seed, because the Passages, by Degrees, grow less, and the Matter of the Seed, as it were, returning back, yields its Nourishment to the Loins, and other Parts.

Q. Have Women any prolific Seed, and in what does it consist?

A. They have a prolifick Seed, if by that you understand their Ovæ, of which their Testicles are full, and which, being impregnated and expanded by the Man's seminal Spirit,

62 *The Rudiments of Physick.*

Spirit, issue forth from their little Cells, or Cases, in which they are, for the most part, contained, that they may pass into the Fallopian Tubes, and thence into the Cavity of the Womb.

Q. Is that Humour which Women emit, in Copulation, a real Seed?

A. It is not; because that Humour is emitted about the Clitoris, and the Orifice of the Vulva, seldom in the Vulva, never in the Womb. This is manifest in pregnant Women, who have the Mouth of the Womb always closely shut, and defended by a kind of yellow Mucus; nor can it be said to proceed from the Bottom of the Womb; because, by this Means, Nature would destroy its own Work.

Besides, many Women conceive without this Humour, as themselves acknowledge. Further, this Humour seldom has the Consistence of Seed; nor is it spirituous, because common Prostitutes, who pollute themselves many times a Day, are not weakened by the Excretion of it; nor is it elaborated like Seed, not being generated in the Organs proper to it, but in the naked Glands.

Q. By what Way is this Humour emitted in Women?

A. The Lacunæ of the Womb emit this Humour, or certain Passages from the Female Prostatæ, and other Glands of the Womb opening into the Vaginæ, by a great Number
of

of Mouths, and that by Titillation, and according to the Constriction of the Fibres of the Womb which happens in Copulation.

Q. Is this Humour of any Use in Women?

A. It is useful, because it continually moistens the Vagina; and, perhaps, is the Cause why the Spirit, or Male-Seminal-Aura, is better convey'd from the Vagina to the Cavity of the Womb, and thence to the Ovaria, for impregnating the Ovum.

C H A P. XII.

Of the Menstruous Blood.

Q. **W**HAT is the Menstruous Blood?

A. The Menstruous Blood, is that which is discharged from the Womb every Month, or thereabouts.

Q. Why do you say thereabouts?

A. Because the Temperament sometimes happen at different Periods, the Food abounding more or less with volatile Salt, and in different Constitutions encrease more than in others, therefore this Flux happens sooner to one, and later to another: Observe, that those of warmer Constitutions, have this Purgation sooner, and in less Quantity, and of shorter Duration, than the Phlegmatic.

Q. By

64 *The Rudiments of Physick.*

Q. By what Ways do they flow, and what is the Womb?

A. They flow thro' the Womb, as thro' an Organ constituted for this End (as the other Parts are destin'd to their several Uses by the Author of Nature.) The Uterine Arteries having a particular Position and Make, having no Inosculations with the Veins, for which Reason they cannot pour the Blood into them, that it may return to the Heart.

Whence the Womb is a certain membranous Part, situated in the lower Belly, between the Bladder, and the Intestinum Rectum, with its Neck extended to the Pudenda; in the Coats of which there are many Blood Vessels, arising from the Hypogastrics, that open into its interior Cavity; and which, commonly every Month, by an inward Motion of the Blood, effect the monthly Purgation.

Q. What is the Cause of this Purgation, is it a Ferment of the Womb; if so, where is it generated?

A. It is occasioned by a Ferment of the Womb, which is put in Action every Month, and which is generated, as I think, in the Heart, where all the Humours (to whatever Part they are destined) by their inordinate Motion, are perfected, and render'd fit for their several Uses; and then the Ferment is carried to the Ovaria, which follows from its Situation upon the Sides of the Womb, to which it is annexed by the Peritoneum. The
Ovaria

Ovaria contains many Vesicles, which beautifully form a Model of the inward Parts of a human Body, and the Ducts and small Passages, as in the Body of an Animal, are represented by very minute Fibres, loosely joined together, which are supply'd, by the continual Constriction of the Heart, with a limpid and subtle Liquor by the spermatic Arteries (out of the Trunk of the Aorta) that are dispersed through these Vesicles, which greatly helps the Delineation of the Parts of the Ovum, by its continual Circulation. These Particles that are separated hither, do not remain here, but, by the natural Course of Circulation, ought to be absorb'd by the lymphatic Vessels, or the spermatic Veins, that inosculate with the Membranes which compose these Vesicles, which ought to happen almost every Month; because that, in these Vesicles, through the Minuteness of the Parts, and the Straitness of their Channels, so great a Quantity of the Humour cannot be separated, as by the other Organs of the Parts, or else these Particles are continually carried to the Heart, with the venous Blood, or the lymphatic Humour, until a sufficient Quantity of the Ferment is collected in the Blood, to produce the usual Discharge.

Q. Do not others assign the Abundance of Blood as the Cause hereof?

A. Some say that the Abundance of Blood, at a certain Time, is the Cause; being assisted
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66 *The Rudiments of Physick.*

by Heat, and the Form of the Womb, which is easily dilated: Those Women who have the most Blood, loose the most: But Country Women who, by labouring hard, consume the Blood, loose little, or none at all, at these Times: Those who loose a great Quantity of Blood by Venæ-section, have very little monthly Flux.

Some discharge the Blood, every Month, through the Nole, the Lungs, the Gums; yea, even through the Pores of the Skin, and of the Head, which I saw myself, in the Hospital at *Leyden*, when I studied Physick, under *Francis Sylvius de la Boe*, forty-three Years ago. Such a Flux may proceed from the bad Construction of the Womb. Those, whose Menfes flow in this Manner, are subject to various Diseases, as the Head-ach, a depraved Appetite, Fevers, &c.

Q. Does not the Ferment of the Womb seem to be the more probable Cause?

A. It seems more probable, that the Ferment of the Womb is deposited, by Degrees, in the Blood; by which, being rarified and heated, it stimulates the Arteries and Nerves of the Womb, and causes its Turgescence and the Exsudation of the more fluid Blood, until the Ferment passes off with it: And this is well effected by the Tincture of Cantharides, prescribed in a small Quantity, with other uterinæ Medicines, for it gives a smart Motion to the Spirits, and curiously produces the
menstrual

The Rudiments of Physick. 67

menstrual Flux, as I have experienced a hundred times in my Practice. This Tincture renders this Ferment of the Womb more powerful, irritating the Womb, and exciting the Menfes, for it consists of much volatile Salt.

This appears also in Women of a bilious Constitution who (having more volatile Salt than the Phlegmatic) have shorter Periods of Purgation.

Q. At what Age do the Menfes begin to flow?

A. About the fourteenth Year; because then the Body has generally its due Magnitude, and the Blood begins to overflow, and abounds in the Uterus, and other Parts; hence the Breasts grow large, and the Neck of the Womb is not so wrinkled, it becomes more dilated, and does not press its Arteries so much; and a greater Heat agitates the Blood more strongly, dilates the Arteries, makes them straiter, and bursts through them.

Q. In what Year, and from what Cause, do the Menfes cease?

A. They cease generally about the fiftieth Year, partly through the Defect of the Blood and Heat, and partly from the Straitness and Dryness of the Passages; they end sooner in those who are of a hotter Nature, because they sooner grow old, and the Heat of the Ferment is sooner extinguished.

Q. By what Passage is the Menstruous Blood excreted?

68 *The Rudiments of Physick.*

A. It passes both by the Vagina, and the Bottom of the Womb ; because pregnant Women sometimes have the Menses ; and, if they happen to stagnate and putrify, they affect the Foetus, and its Aliment, and cause Abortion.

2. How do we know the Time of their approaching ?

A. It is known, by feeling a Pain, Tension, and Heat, about the Spine and Hypogastrium ; for the Blood, in its first Impetus, cannot break through the Arteries.

2. Is it Blood of the Veins, or Arteries ?

A. The Menstruous Blood is from the Arteries, because the Arteries only carry the Blood to the Womb.

2. Do the Menses flow in pregnant Women ?

A. They do, but it seldom happens ; because the maternal Chyle, which there abounds, destroys the Activity of the Ferment : For the Chyle, by Reason of its oleous Particles, sheathing the Points of the Ferment, greatly hinders the Effervescence of the Blood ; partly, because a Portion of the Mother's Chyle goes to the Foetus, so that the remaining Part of the Ferment is too weak to produce its usual Effect.

2. By what Passages do they flow in pregnant Women ?

A. They flow through that Part of the Womb which is free from the Placenta, into the
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the Cavity of the Womb, because at this Time it makes itself a Passage through the hypogastrick Vessels, as being best suited to it.

2. Do the Menfes flow in Women that give Suck?

A. Very seldom, or never; partly for the aforesaid Reasons, and partly because the Ferment of the Womb passes away with the Milk.

2. Does the menstruous Blood differ from the maternal Blood in pregnant Women?

A. It does not; neither does it nourish the Fœtus, nor the Placenta, but dilates the spongy Substance of the Womb, by which it becomes softer and lighter with the growing Fœtus.

C H A P. XIII.

Of the Saliva.

2. **W**HAT is the Saliva?

A. The Saliva is a serous Humour, distilling from the salival Ducts.

2. Give me a Description of these salival Ducts.

A. These Ducts are Vessels *sui Generis*: There are four very remarkable; two Superior,

70 *The Rudiments of Physick.*

rior, which take their Rise from the Parotidæ, by various Branches, and passing by the Cheeks, under the Skin, run, with a visible Orifice, into the Mouth; and also two lower; that, in the same Manner, proceed from the maxillary Glands, by several small Branches, the biggest of which, before it meets the common Conduit, is carried under the digastric, maxillar Muscle: Both the Inferior, under the Tip of the Tongue, near the Incisores of the Lower-Jaw, amongst certain *Papillæ* there situated. The Matter of the Saliva is carried to these Glandules by the Arteries: It further issues out of almost all Parts of the Mouth, as from the *Glandulæ Sublinguales*, from the *Tonsillæ*, which last have two small white Vesicles adjoining to them, that receive the Serum from the Glands, and empty it into the Mouth; also each hath a large, oval Sinus, opening into the Mouth, and containing two greater, and two lesser Sinus's in its Edges, with other small Glands, every one of which hath, in the Middle, a small perforated Sinus.

Q. What is the Use of the Saliva?

A. It quenches Thirst, by moistening the Lips, the Tongue, the Mouth, the Palate, the Oesophagus, and the *Aspera Arteria*; it assists in swallowing our Food; it gives a Beginning to Chylification in the Mouth, for it partakes of the Nature of the acid Humour of the Stomach; *i. e.* it hath certain saline, acid Particles, mingled with the Serum; so that a Mouthful

Mouthful of Bread, chew'd and expos'd to the Sun, will yield a Sort of Chyle; and the small Particles of Flesh and Bread, that stick between the Teeth, grow white, but in a longer Time; so that the Saliva alone is not sufficient for Chylification.

The Saliva extracts the Taste from the Aliments, for without it the Taste fails.

Q. Does not the Saliva, when swallowed, return to the Heart?

A. It returns continually to the Heart, thro' the lacteal Vessels, either with, or without the Chyle.

Q. In what Case is the Saliva excreted more plentifully than usual?

A. When we smell, or see, any Thing very grateful, or earnestly long for any Thing, the Saliva flows more copiously into the Mouth, because the Nerves of the Par Vagum do not only supply the salival Ducts and Glands, but send also some Branches to the olfactory and optic Nerves; whence the stronger Influx of Spirits into these Nerves, encreases that of the Par Vagum, and thereby further contracting their Fibres, the salival Glands are straitened, and eject the Saliva.

Q. What is the Reason, that a Ball of Lead, roll'd in the Mouth, allays Thirst?

A. A Leaden Ball, roll'd about the Mouth, moves the Tongue, straitens the Ducts, and so expresses the Saliva.

A. Why

72 *The Rudiments of Physick.*

Q. Why does the Saliva flow in greater Quantity upon Vomiting?

A. Because the Stomach participates with the maxillar Glands of the Branches of the Nerves of the 6th Pair, and continues the Interiors upon its Tunic, with that which is in the Jaws and Palate, and, in this Case, they are contracted by Symparhy, and emit their Humour: For the same Cause, if the Membrane at the Top of the *Æsophagus* is irritated, it excites Vomiting.

C H A P. XIV.

Of the Pancreatic Juice.

Q. **W**HAT is the pancreatic Juice?

A. The pancreatic Juice, is a serous Humour, which flows from the *Pancreas* into the *Duodenum*.

Q. What is the *Pancreas*, and its Duct?

A. The *Pancreas*, is a certain Substance, consisting of many Glands, and Branches of Vessels and Nerves, collected together in a common Membrane, situated transversely under the Stomach, with one End extended to the Gall, and the other End fastened to the *Duodenum*, and descending a little way with it.

The

The Pancreas hath an excretory Vessel proper to itself, consisting of very many Branches, all of which are joined to the Glands of the Pancreas: It is called, in common, the pancreatic Duct, and is inserted at the same Place with the biliary Duct, obliquely into the Duodenum, or the Beginning of the Jejunum, making, at its Insertion, a kind of Tubercle, by which the Chyle may flow, that it may not hinder the Passage of the Gall, or pancreatic Juice.

Q. How is the pancreatic Juice separated from the Blood, and where is it carried?

A. The Blood, flowing through the Arteries, and striking on the Glands of the Pancreas, draws off the pancreatic Juice, through the Pores thereof, into the small Branches of that Duct.

The pancreatic Juice distils out of these Branches into the greater Duct, and thence into the Duodenum, but in very small Quantities, as is manifest, from its being never full in a live Dog, and, scarcely, when it is closed up by a Ligature.

Q. What Taste has the pancreatic Juice?

A. It hath a weak acid Taste, from its acid, saline Particles, diluted with Serum, which, being mix'd with the Gall, struggles with it, and raises a Fermentation.

Q. What is the Use of the pancreatic Juice?

A. It further elaborates the Chyle in the Intestines, in Conjunction with the Gall, as a

new Ferment: Besides, it tempers the Gall, that it may not injure the Bowels, and dilutes the Chyle. — Read *de Graaf de Succ. Pancr.*

C H A P. XV.

Of the Natural Melancholy Humour.

Q. **W**HAT is the natural melancholy Humour?

A. It is so earthy a Part of the Humours, that it can afford no Nourishment.

Q. Is there such a Liquor found any where in our Bodies?

A. It seems to be no where separated in our Bodies, unless you will allow the succenturiate Kidnies, or renal Glands, to be its Receptacle.

Q. In what State are those Glands in Children?

A. They are larger than in grown Persons.

Q. What is the Opinion of some Persons, concerning the renal Glands?

A. Some think that the melancholy Humour, or *Bilis-Atra*, lodges in the renal Glands (which is false) for it is a Humour evidently contrary to Nature, nor is it found in the Body in its natural State, nor does it
any

any way contribute to the Animal Oeconomy, so that it cannot be assigned to any particular Place.

Q. What do others say of the Situation of the melancholy Humour?

A. Others say, that an acid and black Humour is generated, out of the Blood, in the Spleen: But this Humour is not in the Spleen, nor does it pass from thence immediately into the Stomach.

Q. What is the Substance of the Spleen?

A. The Substance of the Spleen is compos'd of innumerable Vesicles, or little membranous Cells.

Q. What are these Cells like?

A. They are like the Cells in a Honeycomb, knit together in a wonderful Manner: A Branch of the cæliac Artery, by a singular Contrivance, enters the Spleen, which, by means of the Glands within, continually deposits its Humour into the Cavity of the Vesicles, through its excretory Duct.

The ingenious Dr. Sylvius thinks, that the Blood in the Spleen receives something of an extraordinary Perfection: For,

1. The Blood that is separated in the Spleen, does not remain there, but is protruded by a circular Motion.

2. By the Influx of Spirits into the nervous Fibres, that surround every Cell, the grosser and more earthy Matter is expelled, by the

76 *The Rudiments of Physick.*

splenic Vein, into the Vena Porta, and Vena Cava.

3. It is thus further elaborated, that, being rendered thin and aqueous, it might be fore'd to pass through the lymphatic Vessels into the Cystern, for the more easy Ascent of the Chyle through the thoracic Duct.

C H A P. XVI.

Of the Serum of the Blood.

2. **W**HAT is the Serum of the Blood?

A. The Serum of the Blood is a Humour, consisting chiefly of Water.

2. Why is it said to be chiefly of Water?

A. Because, being separated, it is found to contain other Particles, *v. g.* Salt, Acid, and others.

2. What Names is the Serum known by, according as it differs in several Parts?

A. According to its Variation, it is called the Lymph, or the Saliva, or the Humour of the Pericardium, the digestive Juice, &c.

2. How is it called, when it is mixed with the Blood?

A. It is then call'd, the Serum of the Blood.

2. Of what Use is the Serum?

A. It

A. It is the Vehicle of the Blood, and other Humours, to the inmost Recesses of the Parts to be nourished, as it first enters, expands, and relaxes the Pores.

Q. What Proportion does the Serum hold to the Blood?

A. It is in large Quantities, on Account of the great Proportion of Liquors which we daily drank.

C H A P. XVII.

Of the Humour of the Pericardium.

Q. **W**HAT is the Humour of the Pericardium?

A. It is a serous Humour, contained in the Pericardium.

Q. What is the Matter of this Humour?

A. Its Matter is the Serum, having some small Particles of the Blood mingled with it, and is therefore like Water, in which Flesh hath been washed.

Q. Whence comes this Humour?

A. Some say it is a Vapour, that is exhaled from the Heart, and condensed by the Pericardium.

Q. What is the Use of this Humour?

A. To facilitate the Motion of the Heart, as all Things move easier in a Fluid like Water;

78 *The Rudiments of Physick.*

ter; and that the Heart should not strike against the neighbouring Parts with too much Force and Weight.

Q. What further Use has it?

A. To moisten and cool the Heart, lest, by its continual Motion, it should be burnt and dry'd up.

Observe, That as the Humour of the Pericardium is constantly renewed, so it is continually evaporating through the Pericardium.

C H A P. XVIII.

Of the Lympha.

Q. **W**HAT is the Lympha?

A. It is a serous Humour, entirely limpid, contained in the lymphatic Vessels?

Q. How do you describe them?

A. They are extremely thin and pellucid Vessels; they arise almost from all Parts of the Body, and suck up their Liquor.

Q. What is there to be particularly observed in the lymphatic Vessels?

A. Where they pass most safely, they twine about the greater Veins, like Ivy, but do not suck the Serum out of them, of which the veinous Blood has none to spare.

Q. What

Q. What is there to be learned from the Formation of their Valves, from the Ligatures and Inflation of these Vessels?

A. That the lymphatic Vessels, that are beneath the Diaphragm, principally end in the Cistern, or common Receptacle of the Chyle.

Q. What further?

A. The other lymphatic Vessels, that are above the Diaphragm, are inserted into the Pericardium, and into the upper Part of the thoracic Duct, at the Junction of the jugular with the axillar Vein.

Q. What do they there?

A. There they convey their Liquor, for at this Place there is a very perfect Valve, and here they are so small, as to escape the Sight.

Q. When are these Vessels to be seen?

A. When the Lymph is tinged with a slight red or yellow Colour; and after the Death of the Animal, when the Vessels are more distended.

Q. Does the Lymph differ from the nervous Fluid?

A. Not at all.

Q. What is the Lymph, and how generated?

A. The Lymph is the thinnest Part of the Serum, strained off, which does not flow with any Force, but, by a Sort of Transudation, creeps in the lymphatic Vessels, that have a great Number of Valves, to assist this weak Motion.

Q. To

80 *The Rudiments of Physick.*

Q. To what Purpose does the Lymph serve?

A. As I said before, it dilutes the Chyle in the Cystern, that it may more easily ascend through the thoracic Duct, and thin the Blood in the jugular Vein, that it may more easily rarify in the Heart, and replenish the Humour of the Pericardium.

C H A P. XIX.

Of the Intestinal Mucus.

Q. **W**HAT is the intestinal Mucus?

A. It is a glutinous Matter, spread over the Inside of the Bowels.

Q. Whence proceeds this Matter?

A. It is brought, by the Arteries, to the glandulous Coat of the Bowels, and there separated from the Blood, and passes through, by Filtration, into the Cavity of the Bowels.

Q. What Benefit is it of?

A. It defends the nervous Tunic of the Bowels against the Acrimony and Asperity of the Gall, of the Food, and helps Chylification.

Q. What is observed of this Mucus, in Medicines that purge vehemently?

A. In this Case the Mucus is thinned, and entirely carried off, with great Injury.

Q. What

Q. What follows?

A. Sharp Pains, and Gripping of the Bowels; and, at last, a Dysentery, or Bloody Flux; or, at least, the Excrements ting'd with Blood.

C H A P. XX.

Of the Sweat.

Q. **W**HAT is Sweat?

A. Sweat is a serous Humour, like Water, issuing through the Pores of the Skin, or the sudorific Tubes.

Q. Give me a Description of the sudorific Tubes.

A. They are very small Tubes in the Pores of the Skin, that run out to the Cuticula, having each its proper Glandule, by which the Serum, that is, the Matter of the Sweat, is separated, as may be seen by a Microscope.

Q. What makes the Sweat salt?

A. The salt Particles contain'd in the Serum.

Q. What is the Cause of Sweat?

A. It is Heat, either of the Sun, or Fire, or acquir'd from Exercise, our Cloathing, &c. by which the Blood is more stirr'd and diffus'd through the various Parts of the Body:

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82 *The Rudiments of Physick.*

The Mouths of the Arteries, near the Skin, are more open'd, and the more flexible serous Particles flow through them, and pour forth any other Moisture, if any is conceal'd in the Skin, and penetrate the Pores of the Skin, but because they do not pass with sufficient Freedom and Celerity, many of their small Particles, being united, are condens'd into little Drops.

Q. Do not a moderate Opening of the Pores, and the Abundance of Serum, greatly assist Sweating?

A. They do; but the least Opening of the Pores, because it does not stop the Passage of the Serum, conduces more to insensible Perspiration. A too great Constriction of the Pores, impedes the Passage of the Serum, and encreases the Quantity; hence Sweat, arising from Exercise in Winter, is more copious than in Summer.

Q. Why does not the Blood pass off with the Sweat?

A. Commonly the Blood does not pass off with the Sweat, because it is too ramous, but sometimes a few of the smaller Particles of the Blood are seen to accompany it, and then the Sweat tinges our Linnen, chiefly under the Arm-pits.

C H A P. XXI.

Of the Urine.

2. **W**HAT is Urine?

A. Urine is a serous Humour, strain'd off through the Kidnies.

2. Whence comes the Urine?

A. It comes with the Blood (which it dilutes) to the Kidnies, by the renal Arteries: This Humour is separated from the Blood, as superfluous, and is continually running off, as a Part of the Blood is continually flowing to the Kidnies, for the Sake of Nourishment.

2. Inform me how the Urine is separated from the Blood in the Kidnies, and describe their Structure briefly.

A. It is performed in the following Manner: The Blood, mix'd with the Serum, flows upon the exterior, glandulous Substance of the Kidnies, out of the renal Arteries, divided into various Branches; and, compell'd by this Power, certain thinner Particles are instantly separated by its Pores, or minute Canals, into a great Number of larger Tubes, which arise from the minute Canals, and which Tubes make chiefly the inner Substance of the Kidnies; and from these, ending in eight or nine Papillar, or Caruncles, they pass into

84 *The Rudiments of Physick.*

the Pelvis, and thence into the Ureters and Bladder.

Q. What becomes of the rest of the Serum?

A. The rest, which comes to the Kidnies, and was unfit to pass through them, returns partly to the Vena Cava, through the emulgent Veins, and remains in the Blood as before.

Q. Why were these Parts thus formed?

A. They were thus formed, that there might be Time for the Separation of the Serum; thus the outward Tubes of the Kidnies were made larger than the interior. *Vid. Malpigh. de renibus.*

Q. Is the Urine made of the Serum only?

A. The Gall gives it the red and yellow Tincture; and also, the sulphurous, saline, fix'd, earthly, or tartareous Particles, &c. which, by washing the Parts, it carries along with it.

Q. Are there any other particular Ways, by which what we drink is sooner excreted.

A. Some say that, beside the Way of the renal Arteries, already mentioned, there is a nearer Way from the Stomach and Bowels to the Bladder; and they support their Opinion with some probable Reasons, but they do not amount to a Demonstration, for no such Passages do as yet appear to Anatomists.

Q. In what Time, and by what Way, is the Secretion of the Urine perform'd?

A. Why

The Rudiments of Physick. 85

A. Why the Urine passes so soon after drinking Beer, or any other Liquor, *viz.* *Tunbridge*, or *Spaw-Water*, may be understood, without supposing any such Passages; for a large Draught of Liquor immediately increases the Flux of the Serum to the Kidnies, partly because flowing soon out of the Stomach into the Bowels, and thence into the lacteal Vessels, it drives forward the Chyle, previously existing in them, and in the thoracic Duct, and so the Serum is augmented in the Mass of Blood.

Q. Proceed.

A. Because a large Draught of Liquor, by distending the Stomach and Bowels, presses upon the Blood Vessels of the Bowels of the lower Belly, and so causes the Blood, with its Serum, to abound in the other Vessels; so the Mass of Blood is compelled to a free Passage, by which it may, in a better Manner, flow from the redundant Blood, and thus separates the Serum from itself, which, by Reason of its Thinness, very easily passes through the Kidnies; the Cause therefore that we discharge Urine presently after drinking, is not the Urine of the Liquor we drank immediately before, but the Matter which existed in the said Passages is thrust forward by it.

Q. Have you any further Arguments?

A. Further, I say, the Matter we drink passes through the common Passages soon enough, and the Blood, very probably, circulates

86 *The Rudiments of Physick.*

culates entirely, in a sound Person, in a Quarter of an Hour; so it is no Wonder, if we discharge Urine so soon after drinking.

Q. What do you think is the Cause that Asparagus and Madder give a Scent and Colour to the Urine?

A. They do not prove any particular Passages, these Things being of an opening Nature. Vid. *Charlton de Lithiasi*; read *Anatomiam D. D. Bidloo* and *Cooper*. But let nobody think, I would entirely reject any such Passages, since it is probable there may be such, and I hope they may be discovered by the Industry of the modern Anatomists: What I have said, may suffice while these Passages are not discovered; as in treating of the Milk, I have also shewn the Probability of its coming to the Breasts by the Arteries.

Q. How long is the Urine retained in the Bladder?

A. Until the Weight, or the Acrimony, stimulates it.

Q. How is the Urine voided?

A. By the Contraction of the Muscles of the lower Belly, and of the Fibres of the Bladder, whilst upon their Irritation they receive a greater Influx of Spirits.

Q. What is the Reason that our Urine does not run off whilst we sleep, or without our Perception?

A. There is a remarkable annular, or sphincter Muscle, at the Neck of the Bladder, whence,

whence, in discharging Urine, we are oblig'd, by the Contraction of the Abdomen, or the Bladder, to overcome the Action of the Sphincter, which is continually contracted.

Q. Why does not the Urine flow back out of the Bladder into the Ureters?

A. It cannot; because the Ureters are inserted obliquely between the Membranes of the Bladder; and thus, as it falls into them, it shuts up its own Way.

Q. Why do we discharge more Urine in Winter than in Summer?

A. Because the insensible Perspiration of the Pores is obstructed, and the Serum carried off to the lower Parts; thus bathing in cold Water produces the same Effect.

C H A P. XXII.

Of the Tears, &c.

Q. **W**HAT are Tears?

A. Tears are an excrementitious serous Liquor, issuing from the Glands of the Eyes, on Occasion of some great Passion of the Mind, as Pain, Grief, Pity, sudden Joy, &c. agitating the animal Spirits, and the Blood, and compelling them to send a more copious Supply of serous and lymphatic Matter to these Parts. Of their Nature, Origin,
and

88 *The Rudiments of Physick.*

and Excretion, *Vid. Wharton de Glandul. Bartholin, Willis, &c.*

Q. What is the Mucus of the Nostrils?

A. It is a viscid Humour adhering to the Nostrils.

C H A P. XXIII.

Of the Lochia.

Q. WHAT is the Lochia?

A. It is a Flux of Blood, by which Women are cleansed after Child-birth.

Q. How long does this generally continue?

A. Four, eight, ten, or, sometimes, twelve Days.

Q. What is the Matter of this Blood, and how is it excreted?

A. It is the Blood which, during the Time of Pregnancy, used to fill the spongy Parts of the Womb for the Growth of it, and which now partly transfuses into its Cavity, upon its Contraction, and partly enters the Veins, where, making a new Plethora, it is purged in the Manner of the Menfes; or it is that which flows out of the little Arteries, which, before, convey'd the Chyle to the Placenta, for the Nourishment of the Fœtus, and which are not yet quite closed.

OBSER-

OBSERVATION.

If this Blood continues long in the Cavity of the Womb, it congeals into large Clots; or, it may be form'd of the Blood which previously flow'd out of the Secundines, and adhered to the Womb.

C H A P. XXIV.

Of the Water in Child-Birth.

Q. **W**HAT is the Water in Child-Birth?
A. It is that which, at the Time of Child-Birth, flows out of the Womb.

Q. What is the Matter of this Water?

A. Its Matter is the Urine and Sweat of the Fœtus, and the superfluous Chyle contained in the Amnion.

Q. When, by what Cause, and to what End do they flow?

A. They flow when, by the Kicking of the Fœtus, the Membranes are broke; sometimes, long before the Birth; but this is not so well; for, by lubricating the Passages, they ought to accelerate the Birth.

C H A P. XXV.

Of the Hæmorrhoidal Blood.

2. **W**HAT is the hæmorrhoidal Blood?

A. It is a Portion of the superfluous Blood, which is excreted by the hæmorrhoidal Arteries.

2. Does it supply the Place of the Menfes in Women; does it come from the Spleen, and is it derived from the Veins?

A. It supplies the Place of those Purgations in some Men; but does not proceed from the Spleen, as the Ancients believed; nor does it come from the Veins, but from the Arteries.





O F

P H I S I O L O G Y :

O R, T H E

Nature and Principles of P H Y S I C K.

P A R T II.

C H A P. I.

*Of the Spirits, and the different
Species of them in general.*

Question.



H A T are the Spirits?

A. The Spirits, are extreme fine and active Parts of the Body.

Q. Of what Matter do they consist?

A. They consist of the finest Parts of the Blood; that is, the more sulphurous, and, as

92 *The Rudiments of Physick.*

it were, igneous Part, which may be generated from all Parts of the Chyle, of whatsoever Figure, Magnitude and Solidity, &c. so that they are fit to be divided and attenuated.

Q. Do not you prove, by tying a Nerve, that there are Spirits in the human Body?

A. The Nerve of any Part being tied, or cut off, so that the Spirits cannot come to that Part, instantly the Motion and Feeling of that Part is lost.

Q. How do you divide the Spirits?

A. I know of none but the Animal, so called, because by them we perform the animal Functions.

Q. How do you distinguish them under this Class?

A. They are two-fold; those which serve for Perception, and those which serve for Motion, according to that Part of the Nerve into which they flow (as into the medullary Part for Motion, or the membranous Part for Sense) it is called, the vital Spirit, as it performs those Actions, commonly call'd Vital; and the natural Spirit, as it performs natural Actions; and so of the rest, and that without any specifical Distinction.

Q. Do you assert, therefore, that the animal Spirits are the only Spirits?

A. I do; because their Essence consists in a quick Motion of certain fine Particles, separated from the Blood; so that the vital Spirit

is not truly a Spirit, but the finest Parts of the Blood, and therefore of its Essence, as it cannot be separated from it : In the same Manner as Wine, when the Spirit is extracted, is no longer call'd Wine. But as this may be properly call'd spirituous, from the Spirit it contains, so the Blood may be call'd spirituous, and living, from the vital Spirit : With this further Consideration, that the vital Action, from which it is call'd a vital Spirit, may be better comprehended under the natural Action, and so the Division of Spirits into Three cannot subsist.

Q. How are the animal Spirits generated?

A. The animal Spirits are generated in the Brain only, by Separation from the Blood, which, being impregnated with the Matter of the Spirits, is driven out of the Left-Ventricle of the Heart into the small Branches of the vertebral, carotid Arteries, which it passes through, and from which it enters the Cortical, or external Substance of the Cerebrum and Cerebellum, which is softer than the rest, which consists of an infinite Number of Veins and Arteries, taking their Rise from the carotid and cervical Arteries, turning and winding in various Shapes.

The Blood receiving this Impulse, from the Blood behind pressing on the Blood before, the finer Parts thereof, by a peculiar Form being adapted to the fine Passages, does soon pass through the several Circumvolutions of
the

94 *The Rudiments of Physick.*

the Arteries, into the fine Tubes of the Cerebrum and Cerebellum, because there they have a freer Motion.

The Remainder, that is too gross, is carried through the Veins (and, perhaps, by the lymphatic Vessels that inosculate with the said Tubes of the Arteries) into the cervical and and carotid Veins.

2. How many Ways do these animal Spirits flow out of the Brain?

A. Four different Ways: First, by the Power, or Command of the Soul; for, I think, there is such a Law established between the Soul and the animal Spirits, that, upon its Volition, or Will, they instantly flow, according to its Direction, without being protruded by it (which cannot be done by a Spirit.)

Secondly, the Spirits are expelled by Means of the Blood thrown up to the Cerebrum and Cerebellum, by the Contraction of the Heart, new Spirits being immediately separated from it, which push on the animal Spirits, before existing in the Brain, out of their narrow Limits, by the entire Diastole of the Brain, and partly also by the Systole, and by the continual Encrease of Spirits, by which the former are driven forward by the latter; and this Motion is indeterminate, but generally slow, which produces the equal and constant tonic Tension of all the Muscles. For it appears from hence, why at every Pulse there is a
Con-

Concuſſion of the whole Body (to the End that this might be done, in ſome Meaſure, by the conſtant Propulſion of the Blood into the Arteries) it alſo appears why, when one Arm is cut off, the other grows ſtronger; and why, when one of the two antagoniſt Muſcles grows parylitic, the other is contracted, as in a Con-
vulſion, and draws the Part with it with which it is contracted; becauſe then the ſaid Parts are inflated and extended by a greater Flux of Spirits.

Thirdly, the Spirits flow out of the Brain when ſome Part is irritated; for then, by the Motion of the nervous Fibres, the Pores in the Brain are opened, and ſo the Spirits flow immediately towards the Part irritated.

It is thus in Reſpiration, in the Motion of the Heart, in the periltaltic Motion, &c. in all which, there happens a certain natural Irritation. They flow out likewise when any Member, upon being tickled, is inſtantly contracted; but this is a preternatural Irritation.

But, on Account of ſuch an Opening of the Pores of the Brain, this Efflux of the Spirits is ſuch, that it not only happens in the Nerves of the Part irritated, but alſo in the Nerves near adjoining; and hence we are to derive the principal Cauſe of the Sympathy which is found between various Parts, *v. g.* between the Kidnies and Stomach, as the former being irritated, cauſes Vomiting; and between the
Colon

96 *The Rudiments of Physick.*

Colon and the Stomach, between which there is the same Sympathy.

And, Fourthly, they flow variously; that is, quicker, or slower, with a constant, equable, or an interrupted Course, &c. as occasioned by the various Passions of the Mind, such as Sorrow, Joy, Anger, Fear, &c.

The Soul itself not knowing the Manner of such an Efflux of the Spirits, although it is very sensible that it rejoices, is sad, &c. But why the animal Spirits are thus mov'd by Reason of the Passions, cannot be otherwise explain'd, than that there is a Law instituted by the Author of Nature, between the Soul and the Spirits, by which they must be mov'd by a certain Cogitation, or Affection of the Soul.

Q. Do not the Spirits that proceed from the Cerebellum, serve for involuntary Actions?

A. They proceed chiefly from thence, as appears by the Striæ Medulloſæ that proceeds from it to the Nerves of the Par Vagum; and this gives us the Reason why, in an Apoplexy, the Pulse and Respiration do not entirely cease, being partly effected by these Nerves.

Q. Is not this Motion of the Spirits improperly compar'd to the Explosion of Gunpowder?

A. It is so; the Spirits, in their natural State, being about to move, are not fir'd in the

the Brain like Gunpowder, or exploded out of it; for in this Case our Motions could not be restrained at the Command of the Soul.

Q. Whence arises the Pain from Weariness, and what is Weariness itself?

A. Some Pain is felt in the Weariness of any Member, which does not proceed so much from the wasting of the animal Spirits, as from the Solution of the Continuity of the Fibres, through long Tension: But Weariness itself is partly occasioned by the Wasting of the Spirits, and partly by the greater Flux of Blood to the weakened Part; so that, by these Causes, the Spirits are not plentifully enough admitted.

C H A P. II.

Of the Parts in General.

Q. **W**HAT is a Part in General?

A. It is what compleats the Whole.

Q. Is not a Part divided various Ways in Physick?

A. It is; and first into Fluids and Solids.

Q. What are the fluid Parts?

A. The fluid Parts are the Blood and Spirits, of which we treated before, and they are in continual Motion.

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Q. What

98 *The Rudiments of Physick.*

Q. What are the solid Parts?

A. The solid Parts are all those Parts that are distinct from those already mentioned, as the Skin, Flesh, Bones, Nerves, Membranes, Arteries, Veins, Hair, Nails, &c. of which we shall treat in this Chapter.

Q. What is a solid Part, speaking more strictly?

A. A solid Part, is a solid Body joining to the Whole, destined for the Use of the Body.

Q. Why is it said to be destined for the Use of the Body?

A. To exclude Tumors, Warts, &c. which, though adhering to the Body, are nevertheless of no Use to it, and therefore are not Parts of it.

Q. What is the second Division of a Part?

A. The second Division, is into organical, and unorganical Parts.

Q. Which are organical Parts?

A. The organical Parts, are those which require a peculiar Formation for performing some Action proper to itself, as the Eye, the Ear, the Nose, &c.

Q. What are the Parts unorganical?

A. They are such as do not require a peculiar Formation; as Flesh, a Membrane.

Q. What is the third Division of Parts?

A. The third Division, is into principal and assistant Parts.

Q. What

Q. What is a principal Part?

A. A principal Part, is that, without which, the Body cannot subsist, being absolutely necessary to Life.

Q. Which are the animal Parts?

A. The animal Parts are the animal Spirits, the Brain, the spinal Marrow.

Q. Which are the natural Parts?

A. They are, the Heart, Lungs, Stomach, Bowels, Liver, Gall, Genital Parts.

Q. What is a similar Part?

A. Those Parts which appear all of the same Substance at the first Sight.

Q. Why is it said at first Sight?

A. Otherwise, many that are called similar, would not prove such; for there are very few, in which you will not find some Difference. These following are generally taken for similar Parts; a Bone, a Cartilage, a Tendon, the Glands, the Fat, a Nerve, an Artery, a Vein, the lymphatic Vessels, the lacteal Vessels.

Q. How are the Parts divided by the Schools?

A. Into Spermatic, Sanguineous, and Mix'd.

Q. Which are call'd Spermatic?

A. These are called Spermatic (as being similar) a Bone, a Cartilage, the Hair, the Nails, &c.

Q. Which are called Sanguineous?

A. Four Sorts of Flesh; as, first, of the Muscles; second, the Flesh of the Bowels; third, the Flesh peculiar to any membranous Part, as that of the Stomach, of the Intestines,

100 *The Rudiments of Physick.*

of the Bladder, and of the Womb; fourth, the Flesh that forms the Glands.

Q. What is a mix'd Part?

A. The Skin is taken for a mix'd Part, because this seems necessary to make an exact Organ of Feeling.

OBSERVATION.

I much doubt whether all these Parts are such, as that some of them are compounded only of the Seed, and some precisely of equal Parts of both: Yet, I do not deny, that some are form'd, in part, of the Seed; for while, by the Growth of the Ovum in the Womb, which is here understood for the Seed, the Blood and Spirits begin to exist, and, in all Probability, by the drying up of the Sides of their Ducts, out of it they form the Nerves, Arteries, Veins, and certain other Parts; for before the Blood, it was a Vesicle, or small Membrane, of a red, salient Point, in our first Formation. Neither are we oblig'd to deny the spermatic Parts, because every Thing is nourished with a similar Substance, for all Parts of the Body are nourished with Blood, because the most we can conclude from thence is, that we all use to admit those Particles of the Blood into our Pores, which are most agreeable and similar to our Natures, or change them, in some Measure, with our Heat and Spirits, before we are nourished by them. All the solid Parts, which are red, receive this
Tincture

Tincture from the Blood; for they are, in themselves, white, as appears by washing, or steeping them in Water, by which they loose their Redness: And this is the Reason that, in dropical and cachectical Persons, in whom the Mass of Blood is scarcely redder than the Water in which Flesh has been wash'd, the Liver, and other Parts, are so white.

C H A P. III.

*Of the Kinds of natural Action;
and first, of Hunger and Thirst.*

Q. WHAT is Hunger?

A. Hunger is a painful Sensation, or Vellication, in the Stomach, by which we are led to desire something solid to remove it.

OBSERVATION.

Hunger is therefore the Perception of the Vellication, and not the Appetite itself, which rather follows it; for we may suffer Hunger, and not desire Food, as in fasting voluntarily.

Q. Why is Hunger greater in Winter, than in Summer?

A. Because the Ferment of the Stomach is sharper, and the Transpiration less.

Q. What

102 *The Rudiments of Physick.*

Q. What is the Cause of Hunger?

A. It is an Acid; which is prov'd, because Acids encrease the Appetite, and restore it, when lost; and those Things take it away, that destroy, or temper Acids; *v. g.* Oc. Cancro. C. C. calcinat, Pearls, fat Substances, Spirits of Wine, &c.

Q. What is Thirst?

A. It is an uneasy Sensation, or Vellication, in the Mouth and Jaws, by reason of which, we are determined to desire something liquid, to remove it.

Q. What is the Cause of Thirst?

A. It is Dryness; a salt Humour, or Vapour. Dryness, of itself, does not occasion Thirst, because it is only the Absence of Moisture; but for as much as through it the Fibres of the parched Oesophagus touch each other, and are affected in their Motion, with an uneasy Sensation: For it is caused by the Motion of the nervous Fibres propagated to the Brain, and the Seat of the Soul.

Q. Does not Thirst affect the Soul more than Hunger?

A. We find, by Experience, that Thirst is a most grievous Pain, and not so easy to be sustained as Hunger; because the Absence of Moisture in the Blood, destroys the natural Functions, and the Blood loses its Heat: And then the Separation of the Spirits, and other Humours from the Blood, and their Return to it, is injured: Hence all the Powers languish,
and

and Death is the Consequence of a greater Exsiccation of the Blood.

I should now treat of Chylification (but as I have treated of it under the Chapter of Humour) I shall only add two or three Things concerning it, before I speak of Sanguification.

In the first Place, I am of Opinion, that Digestion is better performed at Night, when we sleep, than in the Day, when we are awake, if we take an equal Quantity of Food, and other Things equally consider'd: For as in Sleep the Blood and Spirits are not so much carried towards the outward Parts of the Body, so the Stomach has more Acid and Heat, is more strongly contracted, and better digests the Food. Hence it follows, that the Supper should be the best Meal, contrary to the modern Custom. Nor does it signify, that the Time between Dinner, and the next Supper, is less than between Supper, and the next Dinner; because it is certain, that what we eat at a plentiful Dinner, is often not digested before Supper, and so the Stomach is charged with a double Burthen.

Besides, this does not prove that Chylification is better performed in waking, than sleeping, but, at most, the quicker Passage of the Chyle out of the Stomach.

Q. Why do some Persons feel a Coldness and Shivering presently after eating?

A. Because

104 *The Rudiments of Physick.*

A. Because our Drink is cold, and the numerous Nerves of the Stomach are more agitated by the Coldness of certain Kinds of Food, and so, by the Motion of the Fibres, the animal Spirits are more agitated, and flow with more than usual Force into the Muscles of the Body: But this does not happen because the Coldness is communicated to the Stomach, and the Blood thereof, and then to the other Parts, even to the Heart, by successive Motion, for some Persons shiver immediately upon taking any Thing cold; so that there is not Time enough for such a successive Communication.

Neither is this Chilliness, or Shivering, occasioned because, at the Time of eating (according to the vulgar Opinion) all the Heat retires to the Stomach for Digestion, or Chylification, and forsakes the other Parts; for if this was the Cause of this Chilliness, why does it not last longer? For Digestion is not perform'd in so short a Time. Cold is the Cause of it; therefore, neither in Power or Action, can warm Things cause a Chilliness.

OBSERVATION II.

Those Things which are grateful to the Taste, make the best Chyle, because such Things are more pleasing to the Stomach; whence it digests them with more Force, and receives a greater Flow of Spirits.

C H A P.

C H A P. IV.

Of Sanguification.

Q. **W**HAT is Sanguification?

A. It is the Change of Chyle into Blood.

Q. Is not this performed in the Liver?

A. It is performed in the whole Body; but more particularly in the Heart, in its Left Ventricle, in which the Particles of the Chyle are greatly agitated and comminuted with those of the Blood; and, being wrought together, are render'd more thin and flexible; and at length growed by a different Reflection of the Light; whence it is no Wonder that congeal'd Blood makes a more solid Mass than the Chyle, tho' its Particles are thinner, because they are also more flexible, ramose, and ready to unite with each other, than the Chyle, which is made by a groffer Division of its Parts by the Ferment of the Stomach.

Q. What is the Cause of Sanguification?

A. It is a Heat, or a natural essential Fire; which remaining in the Heart, from the previous Fermentation of the Blood, immediately insinuates itself into the Pores of the Blood that fall into the Heart, mix'd with the Chyle, in the Passage of which, while it meets some Particles heterogeneous to it, it is

106 *The Rudiments of Physick.*

more collected into their Pores, that it may fill them, and so, by fermenting and variously agitating the Particles of the Chyle among themselves, and with the Blood in the Heart and Arteries, it, by Degrees, makes them finer, more flexible, and disposes them to Redness.

Q. How is Sanguification perform'd, in general through the Body?

A. It is perform'd in the Veins and Arteries of the whole Body, to which the Blood also carries the Fire out of the Heart; whence it is probable, that its thinner Particles, by that Motion of Rarefaction which they have, besides that of Circulation, are projected more outwards, and to the Sides of the Vessels; but that the grosser and less moveable, are detained more in the Middle; and thence it is, that the thinner Part of the Blood only is drawn off in Venæ Section, if the Orifice is small.

Q. What is the Cause of the Blood's Redness?

A. That Heat is the Cause of its Redness, and, consequently, of Sanguification, no-body will deny, who sees that Quinces, Beer, and other Things, which before were white, grow red with boiling; some Chymical Liquors also grow red by Fermentation; and Oysters, which, from their Coldness, are without Blood, at a certain Time, their Heat increasing, change their nutritious Juice into Blood.

C H A P. V.

Of the Circulation of the Blood.

Q. **W**HAT is the Circulation of the Blood?

A. It is a Motion by which the Blood continually flows from the Heart, by the Arteries, and returns to it again by the Veins.

Q. How do you prove the Circulation of the Blood?

A. By bleeding in the Arm, or the Hand, as well as by the Ligature.

Q. How is the Circulation perform'd?

A. The Blood is carried by the ascending Vena Cava to the Right Auricle of the Heart, thence into the Right Ventricle of the Heart; and, after its Rarefaction there, into the Left Auricle of the Heart, thence into the Left Ventricle, and thence into the pulmonary Artery; after another Rarefaction here, it is driven into the Aorta Ascendens, thence descending, and distributed through all Parts of the Body; out of which, lastly, it is carried into the corresponding Branches of the Vena Cava, and Porta to the Right Auricle as before; and that, as before described, in four Ways; that is to say, 1st, immediately by the Inosculation of the Branches and Transudation out of the Artery

108 *The Rudiments of Physick.*

into the adjoining Vein; or, 2d, immediately by the Flesh that is between the Branches of the Veins and Arteries; and, 3d, by the Sinus's, and their Branches in the Brain, where the Blood is absorbed out of the carotid and vertebral Arteries by the Sinus's; and, 4th, it is carried out of these to the Jugulars.

Q. What is the End of the Circulation of the Blood?

A. It is designed for the Nourishment of the Parts, for warming the Body for the Generation of vital and animal Spirits, and for preserving the Blood from Putrefaction.

Q. Can you tell how long the Blood is making one entire Circulation?

A. This cannot be exactly known; less Time is required for the Circulation of the whole Mass of Blood in hot, than in cold Constitutions; because in these, through the quicker Rarefaction of the Blood, the Heart is sooner irritated to Contraction, or rather Constriction, by which it propels the Blood. Also less Time is required in those that are in Motion, than in those that are at Rest; because, in the former, the Vessels, by the Contraction of the Muscles, are more straitened, and the Blood assisted in its Motion.

Also less Time is required for the Circulation in those who have Fevers, than in healthy Persons; unless we say, that the Blood is not moved quicker in one than the other, but that, through the greater Heat and Acrimony
of

of the Blood, the Heart, and its Auricles, are suddenly irritated and constricted, and so the Blood they receive is sooner expelled, but in less Quantity; because, through the sudden Irritation of the Heart and Auricles, there is not Time for receiving a large Quantity of Blood; therefore, though the Blood is driven into the Arteries by a quicker Motion, yet in smaller Quantities at each Pulsation; so the whole Mass does not circulate sooner. Lastly, less Time is required for the Circulation of the Blood in the Vessels that are near the Heart, such as the pulmonary, intercostal, and coronary, &c. *Lower* thinks, that the Blood circulates with great Celerity, and more than six times in an Hour, in an healthy, and full grown Person (and the same in those who are younger) and he is inclined to believe this from the Number of Pulses, which is, at least, 2000 every Hour, and from the Quantity of Blood that enters the Ventricles of the Heart after every Pulsation, and the strait and violent Constriction of the Heart following, to expel it again entirely; for this Quantity of the Blood, in a healthy and grown Person, is not a few Drops, a Drachm, or half an Ounce (as some believe) but two Ounces at least: This is proved by the Size of the Left Ventricle of the Heart, which easily contains two Ounces; and from the great Distention of the Heart in the Diastole, which is more occasioned by the Quantity of the Blood, than
its

110 *The Rudiments of Physick.*

its Rarefaction, which is always moderate, nor could the Ventracles be so expanded with a less Quantity: It also appears from the Quantity of Blood which, at every Pulse, even in a Dog, is seen to gush out of the Left Ventricle, when it is cut open.

Supposing then, that the Quantity of Blood in a healthy, grown Person, which enters the Ventracles at every Diastole, and which is entirely expelled again by the Systole, to be two Ounces; it follows from hence, that in one Hour's Time (in which, at the least, there will be two Thousand Pulses) 4000 Ounces of Blood will circulate through the Heart, which make 334 Pounds.

Let us suppose therefore that, in the said Person, there are 25 Pounds of Blood (altho' this would be very much, and there is seldom so much Blood in the Body, by some Pounds) it follows, that the Blood, in one Hour, would circulate thirteen times, and oftener, if in less Quantity.

Moreover, with what Celerity the Blood circulates, appears from this; that, upon cutting open only one of the carotid Arteries, almost all the Blood will flow out through it, within the twelfth Part of an Hour; and, if this happens, in what a short Time would it not run out of the Aorta, or all the Arteries cut together? Even in the twentieth Part of an Hour (or three Minutes) the Blood would entirely flow out, if, having tied up the
bronchial

bronchial Arteries under the Axilla, the descending Aorta is compressed, by the Finger, near the Heart; for thus the whole Mass of Blood flows out, except what enters the vertebral and carotid Arteries.

Q. What is there further to be observed in the Circulation of the Blood?

A. It is to be observed, that the Blood does not move faster downwards, than upwards; and, for this End, the Heart is placed nearest the Head. Hence also it appears plainly, why a Hand, hanging down, swells, viz. because more Blood ascends by the bronchial Artery, than can be absorbed by the corresponding Vein, and so overflows the Fibres; the contrary happens in holding up the Arm.

It is also observable, that when we are girt hard with a Girdle, we are warmer, because it keeps our Cloaths nearer to us; and also because the Circulation being obstructed in the outward Parts, the Blood circulates faster inwardly.

Q. Does not the Blood circulate in the inward Parts in a Syncope, and also in hysterical Disorders?

A. I reply: In hysterical Disorders, a Syncope, &c. although the Circulation ceases in the outward Parts, as is manifest by the Pulse ceasing, yet it may continue in the coronary and intercostal Vessels, and others near the Heart; and, perhaps, in these Disorders, sometimes

112 *The Rudiments of Physick.*

times the Circulation is entirely stopp'd for a short Space.

N. B. In such a Case, the Patient's Recovery depends on the Use of volatile Medicines, in rousing the vital and animal Spirits, that it may be renew'd on the Patient's Recovery. So the red Point in an Egg, that is cold after being sat upon, ceases to beat, but revives upon being touch'd with the warm Finger, or breath'd on, and moves as before.

Q. Do not other Humours circulate in the Body, as well as the Blood?

A. As it sufficiently appears that the Blood circulates through the Arteries and Veins, so the Humour of the Pericardium, the Saliva, the pancreatic Juice, the Lymph, the Spirits, &c. have all a peculiar Sort of Circulation; for (as may be seen under each distinct Article) they all come from the Heart, and return to it again, except the Gall, of the Return of which to the Heart, we have no certain Knowledge.

C H A P.

C H A P. VI.

Of the Motion of the Heart.

Q. **O**F what Kind is the Motion of the Heart?

A. It is a muscular Motion.

Q. How do you distinguish the Motions of the Heart?

A. Three Ways; the contracting Motion, call'd Systole; the dilating, Diastrale; and the Pause between both, which is call'd, Perisystole.

Q. Are the Auricles of the Heart also mov'd, and in what Manner?

A. Both the Auricles of the Heart have also their Systole and Diastrale, like the Ventricles; but whilst it is their Systole, it is the Diastrale of the Heart; and the Contrary.

Q. What is the Cause of the Contraction, or Systole, of the Heart?

A. The Systole of the Heart is performed by the Influx of the animal Spirits, proceeding from the Irritation of the Heart, by the Quantity, Turgescence, or some other Quality of the Blood; for the Blood naturally flows to an irritated Part, because the Pores of the Brain are then opened by the Motion of the nervous Fibres; the Systole can in no way

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be

114 *The Rudiments of Physick.*

be effected by the mere Spring of the Heart, which cannot be great enough in so soft a Part.

Q. What do others say against this Position?

A. They say, that the Heart, being cut out, if it is prick'd, will continue beating: But, I answer, that this Pulsation is not performed without some Blood yet rarefying in the Ventricles; otherwise it is only performed by the Spirits in some Fibres yet remaining; and, consequently, is not a true Pulse.

Q. Whence come these Spirits?

A. From the Cerebellum; which constantly supplies them to the Heart, by the Nerves of the eighth Pair; for these being ty'd, in a Dog, he will die in a Day or two, with a Palpitation of the Heart, as *Lower* affirms; and his Death would happen sooner, but that some small Branches of the intercostal Nerves run to the Heart, which cannot be stopp'd by a Ligature: Thence it sufficiently appears, how much the Heart stands in Need of the Brain, the Spirits (as mentioned before) flowing for the Constriction of the Heart, by the Irritation which it suffers in its Dilatation; whence those, whose Hearts are weaker, as Children, and others, have the quicker Pulse.

Q. Is not the Motion of the Blood accelerated by opening a Vein?

A. It is; as appears by the Pulse growing quicker presently after; which is partly occasioned by the freer Passage of the Blood; partly

partly by Reason of its lesser Quantity, in Regard of the *Materia subtilis*, or subtile Matter, which, on this Account, is not less'n'd in the Heart, tho' it was only sufficient before in the Blood.

Q. Is not the Constriction of the Heart perform'd in every Dimension?

A. The Heart is constring'd in every Difference of its Situation; and, that it might be perform'd with more Force, it hath many little Cavities and Chinks, that the Flesh crouding together, might not hinder its Motion, its Cuspis in the Systole is lifted up towards the Bale, that is less moveable, and the Reverse happens in the Diastole.

Q. Is the Systole perform'd with great Strength?

A. How strong the Systole is, has been found, by putting a Finger into the Heart, which it will squeeze with as much Force as the Hand of a strong Man: And this he must admit, who considers to what Distance, and through what Windings, it forces the Blood thro' the Body. I have seen it lift up the Ribs of the Left Side of a Child, that labour'd under a Palpitation of the Heart. In a noble young Lady, I also observed so strong a Systole, that it made a remarkable Sound, that was heard by several in Company, as well as myself. In some Cases it has been found so strong, as to break the Ribs; though such

116 *The Rudiments of Physick.*

Systoles are preternatural ; but yet, from these Instances, we may judge of its natural Force.

Q. How do you again confirm, that the Systole of the Heart is effected by the Influx of the Spirits into the Fibres ?

A. The Contractions of the Heart, or some Part of it, upon being prick'd, after it is cut out, does not hinder the Belief of the Influx of the animal Spirits, because they are, indeed, effected by animal Spirits still remaining in the Fibres, which flow'd thither by the Nerves. Nor does the Contraction that happens in the red, salient Point of an Egg, after Incubation, though the Nerves do not yet appear, disprove this Opinion ; for there also this Constriction is effected by an invigorated Membrane, while it is too much distended by the effervescent Blood and Humour which it encompasses with the repelling Contraction of its Fibres ; whence it hath the Nature of a Muscle, and is the Principle of the Heart.

Q. Why does the Heart beat more strongly in the Left Side ?

A. Because the great Artery passes out on that Side, its Point, or Mucro, inclines that Way, and the Contraction there is greater, from the greater Strength of the Left Ventricle.

C H A P. VII.

Of the Pulse.

2. **W**HAT is the Pulse?

A. The Pulse, is an alternate Dilatation and Contraction of the Arteries.

2. What is the Cause of the Diastole and Systole in the Pulse?

A. The Blood is the Cause; which, whilst it is driven into the Arteries by Constriction, partly by its Rarefaction, and partly by the greater Abundance, which follows upon its Addition at every Pulse, to the pre-existing Blood in the Arteries, occasions their Distention; and this is call'd Diastole. The Cause of the Systole, is, partly, the Reflux of the Blood into the Veins in the Time that the Heart is again dilated, by which the Channel of the Artery grows something less, and, partly, also by the Constriction of the orbicular Fibres in each Coat of the Artery, by the Help of which, whilst these Fibres are inflated with animal Spirits, by their being irritated in their Dilatation, the Artery continually endeavours, in some Measure, to contract itself.

2. Do not the Arteries move with a Motion contrary to that of the Heart?

A. It

118 *The Rudiments of Physick.*

A. It appears they do, from what has been said; for the Diastole of the Arteries happens with the Systole of the Heart, and *vice versa*; but they move with the same Motions as the Auricles of the Heart, which likewise move contrary to the Ventricles.

Q. Why is there a Pulse in the Arteries, and none in the Veins?

A. The Arteries in general have a Pulse from the Nature of the Circulation; for the Blood moves through them, out of a larger Passage into a smaller, with a great Force, which occasions their Expansion; and then, because the Artery resists more the passing Blood with its double Coat, and is therefore vibrated by it.

Q. How do the Veins transmit the Blood?

A. From a narrower Passage to a wider, with a slower Motion, and they accommodate themselves more to the passing Blood, and therefore are not expanded with the Force that is required to make a Pulse.

Q. Is not the Pulse of the Artery felt in the Diastole, but not in the Systole?

A. The Pulse of the Artery is felt in its Distention (or Diastole) and then it recedes from the Finger; whence the Quickness of the Systole is known, by considering it with the Diastole.

Q. What is the Number of Pulses in an Hour, and give me the Reason of the Variation of the Pulse?

A. There

A. There are, at least, 2000 Pulses in an Hour in a healthy Person, commonly many more, as any one may experience, by numbering their own. In the mean Time, they are frequently varied by the Passions of the Mind, and other Accidents; thus they become quicker by Anger, by Joy, by Labour, by Running, &c. and slower in Sorrow and Fear, &c. through another Influx of Spirits into the Heart, and thereupon another Circulation of the Blood. In Children the Pulse is quicker, because their Hearts are weaker, and more easily irritated; their Arteries also are more easily dilated, and their Blood thinner, and easily rarefied.

C H A P. VIII.

Of the Motion of the Brain.

Q. **W**HAT is the Motion of the Brain?

A. The Motion of the Brain, is its constant Motion of Systole and Diaſtole, alternately, according to the Direction of its Substance, and independent of the Meninges.

Q. How do you prove the Motion of the Brain?

A. It is proved because, upon its Motion, there is a remarkable Substance left between the Dura and Pia Mater.

Q. How

120 *The Rudiments of Physick.*

Q. How do you prove its Motion further?

A. If the Brain is made bare, by taking off a thin Part of it, this Motion is apparent to the Eye: It is also reasonable to believe it from the great Quantity of Blood and Spirits it receives from four Arteries, which cannot fail of lifting up so lax a Body, but the Syftole of the Brain is the Diaftole of the Heart, and the Contrary; as appears by applying one Hand to the Wrist of an Infant, and the other to the Meeting of the Sutures in the Crown of the Head; for, by this Means, the Artery is perceived to beat with the Brain, and, consequently, in the Contraction of the Heart.

Q. In what Manner then hath the Brain a Syftole and Diaftole?

A. It has a Diaftole, upon the Quantity of the Blood and Spirits being increased; and a Syftole, partly, upon their being lessen'd again, by which it subsides; and, partly, by Means of the fibrous Substance of the Brain, and the Pia Mater, which is irritated, invigorated, and contracted.

Q. What is the Use of the Expansion, or Diaftole, of the Brain?

A. Its Use, is a certain perpetual Repletion of the Nerves and Muscles by the animal Spirits.

CHAP. IX.

Of the Generation of Spirits.

Q. **H**OW are the Spirits generated; is it a natural Action; and how is it perform'd?

A. The Generation of the Spirits is absolutely natural; and is no otherwise perform'd, than by the striking of the Particles of the Blood against each other, and by a violent Motion among themselves; whence it happens, that the Parts standing out are broken off, and some Fragments of the Blood are so diminished, subtilized, and polished, that they are far more volatile than any other Parts in the Body, and fitter to flow into the finest Channels, and may be esteem'd the *Primum Mobile* of the other Parts.

Q. What Parts of the Food are soonest converted into Spirits?

A. Those Parts which previously, of themselves, come the nearest to Spirits in Figure and Agility; such as some of those that are in Spirits of Wine.

Q. CHAP.

CHAP. X.

Of Respiration.

Q. **W**HAT is Respiration?

A. Respiration is a Motion by which the Air is alternately receiv'd into the Lungs, and again expelled out of them.

Q. How many Parts hath Respiration?

A. Two; Inspiration, and Expiration.

Q. In what Manner, and by what Organs, is Inspiration performed?

A. Inspiration is partly performed by the Dilatation of the Thorax, in which the Air nearest the Thorax is repelled, and this protrudes more Air (for the Universe is full of Bodies; nor is there any such Thing as their penetrating each other by Nature) till some is received, by the Mouth and Nostrils, into the Lungs; and, by their Means, fills up the Space left in the dilated Thorax, partly by the elastic Force of the Air, or its spontaneous Endeavour to expand itself: And, lastly, in part, by the Pressure it receives from the Weight of the incumbent Atmosphere; from these Causes the Air is impelled into the vesicular Substance of the Lungs, and not from any fictitious Endeavour to avoid a Vacuum.

Q. In

Q. In what Manner, and by what Organs, is Expiration performed?

Q. It is performed by the Constriction of the Thorax and Lungs; and also by the Heating and Rarefaction of the Air in the Lungs, by which the Parts of the Air mutually expel each other for Want of Room.

Q. The Expiration is not perform'd by the Diaphragma, the Lungs, or the Blood; but do not the Lungs contribute to Expiration?

A. The Fore-part of the Diaphragma, in Inspiration, ascends into the Thorax, but the Hinder-part is depressed by the Lungs being fill'd with Air; the Reverse happens in Expiration.

Q. Is the Air we receive, by Inspiration, entirely discharged by the next Expiration; and where does it come from?

A. The Air we receive by one Inspiration, is not totally expelled by the next Expiration, but some Portion of it may remain in some Vesicles of the Lungs, which is thrown out by the second Expiration; so some Part of the second Inspiration may remain for the third Expiration, and so on.

Q. Is there not a certain Moisture discharged with the Air in Expiration?

A. How great a Moisture is discharg'd with the Air, may be seen by a Looking-Glass, or Window, which we breath upon in Winter Time, for it is presently condens'd into Drops,

Q. 2. and

124 *The Rudiments of Physick.*

and even when we breath in the open Air of the Room, in very cold Weather,

Q. Whence does this Moisture chiefly proceed?

A. It proceeds chiefly from the Vapours in the Thorax and Lungs; for they may be taken into the Lungs again; as we see the extravasate Blood in the Cavity of the Thorax insinuate itself into the Lungs, and discharge itself by the Mouth.

Q. Can the Air, on the Contrary, that is taken into the Lungs, penetrate into the Cavity of the Thorax?

A. Not in the least; the Reason is, because those extreme small Passages, which are in the Membrane of the Lungs, yield a Passage from the Cavity of the Thorax to the Lungs, but not back again; and that, by Reason of their oblique Situation between the Lamellæ of the Membrane of the Lungs, by which they imitate Valves, as we see in the Orifice of the Urethers, which can transmit the Urine to the Bladder, but will not let it flow back again.

Q. Does not the Respiration continue, when the Thorax and Lungs are hurt?

A. Though one Side of the Thorax be hurt, or one Lobe of the Lungs consum'd, there will still be some Respiration, because some Air may yet be convey'd to the Lungs by the Mouth and Nostrils.

Q. Is Respiration, in itself, a spontaneous, or voluntary Action?

A. Re-

A. Respiration is, in itself, a spontaneous Action, because it is perform'd, even against our Will, and when we know nothing of it, as in Sleeping; yet it is voluntary, as to the Manner of it, because we can accelerate and retard it at Pleasure; and we have this Power, because the Motion of the Thorax is commonly perform'd, partly, by a voluntary Influx of the Spirits, by some Nerves deriv'd from the spinal Marrow; otherwise, as far as that Motion is perform'd by the Spirits, from the Nerves of the Par Vagum, springing from the Cerebellum, whose Influx is not perform'd at the Power of the Soul, so far the Respiration is involuntary. Notwithstanding, it may be understood, how Inspiration and Expiration are perform'd so regularly; that is to say, because, in Inspiration and Expiration, some Parts being successively longer irritated than others, re-call the Spirits into themselves from the Cerebellum, with a troubled Motion of the nervous Fibres by Succession; and, being thus contracted, successively cause Inspiration and Expiration. I do not doubt that, during Inspiration, the intercostal Muscles, the Diaphragma, and others, that serve for Expiration, are thus irritated, whilst they are longer strain'd by their Antagonists; and also, that the Lungs are so irritated, whilst the Blood, through the Want of fresh Air, being too much heated, swells in them, and gives them too great an Expansion; and the Contrary happens

126 *The Rudiments of Physick.*

happens in Expiration, when the Parts, serving for Inspiration, are so irritated.

Q. What is the End of Respiration?

A. The principal End of Respiration, is the Voice; to form which, there was Need of Air, also the Excretion of some thick Vapours, or certain adust Particles (which necessarily arise from our Heat) a certain Refrigeration of the Blood, and the drawing odorous Particles to the Nostrils.

In Regard to the Vapours, they continually come with the Blood, through the pulmonary Artery, to the Bronchiæ, and are exhal'd, otherwise they would extinguish the native Heat.

In Regard to the Refrigeration of the Blood, here you may observe, for what Reason the Air cools it, and why all Sorts of Air is not fit for Respiration. I know, indeed, that others will have it, that Respiration is not intended to cool the Blood, but for the Ventilation, and exciting of the vital Flame residing in the Blood, and are ready to prove this by many Arguments: But it comes to the same Thing with what I mean by Refrigeration; for I do mean it such, as not to destroy the Heat, but continue it; for, through Defect of Respiration, the Blood would loose its Heat.

Q. Why is Respiration accelerated in Fevers?

A. Whilst

The Rudiments of Physick. 117

A. Whilst the Blood flows into the Lungs from the Right Ventricle of the Heart, and into all the rest of the Body from the Left, it would be dissolv'd by the febrile Heat, and would almost entirely evaporate in Fumes, and would not sufficiently preserve its Warmth, if it was to remain in the Lungs as long as when it is in the natural State, and so the Heart would sooner be destroy'd, or else this would happen, because the Blood being too much rarified in the pulmonary Artery, and being mov'd every Way by its Turgescence in this Passage, it would close up the Valves of the Right Ventricle, and, by stopping the Motion of the Blood, would be the Occasion of the Suffocation of its own Heat; and this I take to be the Case of such as are hang'd; although their Death may be partly caused by the Defect of the Influx of the animal Spirits into the Heart, through the Compression of the Nerves of the Par Vagum, and by the shutting up the carotid Arteries.

Q. Do not those who breath with Difficulty, easily fall into a Pthysick?

A. Those whose Lungs do not move freely, through any natural Defect in their Make, do easily fall into this Disease; because their Lungs, having not a due Freedom of Motion, cannot discharge the Fumes, and other acrid and grosser Particles of the Blood, whence they become obstructed, and, at length, corrupted and eroded.

Q. Doth

128 *The Rudiments of Physick.*

Q. Doth the Fœtus breath in the Womb?

A. It is certain, that the Fœtus does not breath in the Womb, as appears by many Arguments.

Q. What is the Reason then, that it breaths so freely as soon as born?

A. This happens, because of the Motion of the Fœtus in its Birth, its Blood circulates much quicker, and rarefies in the Lungs; and then, because the ambient Air, by its elastic Force, or by the Pressure of the Atmosphere, immediately flows into the Lungs, by which they are irritated, and they endeavour the Expulsion of the irritating Air by their own Contraction, join'd to that of the Thorax; these Causes being increased, the Irritation continually encreases the Expulsion, and so Respiration, and the Necessity thereof, are continually encreased.

Q. By what Means do Divers continue under Water?

A. Divers can remain a long Time under Water, without Breathing, because they know how to fill themselves with a large Quantity of Air, and because their Heat is less: Some say, they breath, and know how to separate the Air from the Water, by certain Application of the Hand, or some Instrument to the Mouth.

Q. In what State are hysteric Women, when they are not perceived to breath?

A. Hysteric

A. Hyfterick Women are said, sometimes, to continue alive a great while, without breathing; but, I think, they breath sufficient for their languid Heat, though not perceptibly; or else the Air passes in and out of the Lungs imperceptibly; and this is sufficient to preserve them alive.

C H A P. XI.

*Of the peristaltic Motion of the
Stomach and Bowels.*

2. **W**HAT is the peristaltic Motion?

A. It is a vermicular Motion, by which the Stomach and Bowels are continually and successively straitened from the Beginning to the End, and move with a waving Motion, like the Creeping of Worms. This Motion is sometimes inverted, and then it is call'd, Epistaltic; which is caused by the violent Influx of Spirits into the Fibres, or the Fibres being overcharged, the Spirits, in a Manner, flow back through them, and, by inverting their Motion, cause a Vomiting.

C H A P. XII.

Of Nutrition.

2. **W**HAT is Nutrition?

A. It is the Conversion of our Food into the Substance of the living Body, or the natural Restoration of Parts wasted. Nutrition is not perform'd by Attraction, nor by any Juice proceeding from the Nerves, but rather by the Chyle. I take no Notice here

Of the Growth of young Persons;

Of the Decays of Age;

Of Generation, &c. having mention'd these Things before.



THE
RUDIMENTS of PHYSICK.
PART the SECOND,
CONTAINING
HYGIENE:

OR, THAT

Branch of it which treats of HEALTH, and
the proper Means of preserving it.

CHAP. I.

Of the Non-naturals.

Question.

WHAT do you understand by
the Term *Hygiene*?

A. I mean, the Art of pre-
serving Health.

Q. Of how many Parts does
it consist?

A. Three: 1. The Preservation of present
Health. 2. How to avoid Diseases. 3. The
Means of attaining long Life.

R 2

Q. What



132 *The Rudiments of Physick.*

Q. What are those Things you call Non-naturals?

A. They are those Things which are necessary to preserve Health, but injure it when they are not rightly us'd, or are vitiated.

Q. What is the Number and Quality of the Non-naturals?

A. There are six: 1. The Air. 2. Meat and Drink. 3. Motion and Rest. 4. Sleep and Watching. 5. The Excretions and Retentions. 6. The Passions of the Mind.

Q. Are the Non-naturals indifferent, either to injure, or benefit our Health?

A. They are, according as they are, or are not, rightly us'd; and are a Sort of Medium between the natural Things, and the Things contrary to Nature.

Q. How can the same Thing be agreeable to Nature, and contrary to it, under a different Consideration?

A. These Things, under the same Sense, appear contradictory; but, under a different Consideration, a Thing agreeable to Nature, may be contrary to Nature; For Instance; Animal Motion is a Thing natural; in as much as a human Body hath that Motion from Nature; and Non-natural, when it is exerted too far.

Q. What do you understand by being ill us'd, as here understood, and whence does it proceed?

A. By

A. By being ill us'd, ought to be understood of the Use in the different Respect of this or that Person; or, in other Terms, what is ill apply'd to one, is rightly us'd by another, according as Nature and Custom vary in different Persons; to which much ought to be allow'd in the Use of the Non-naturals.

And, indeed, the same Thing may be proper at one Time, and improper at another; whence there are various Ways, in which these Things may be wrong us'd: As for Example, they may be wrong in Quantity, either too much, or too little: Or in Quality; that is, too hot, too cold, moist, or dry; or too thick, too thin, viscous, acid, salt, or hard, &c. or wrong in the Time of Eating or Drinking; or, in the Course of Eating, while this or that Sort of Food is eaten first or last, &c. as will be better understood when we shall treat on each of the Non-naturals separately.

2. In what Manner are the Non-naturals call'd necessary.

A. According to their general Heads, but not their particular Species; so Food in general is necessary, but not this or that particular Sort; but how necessary the Non-naturals are, will sufficiently appear from what we shall say under each particular Head.

C H A P. II.

Of the Air.

Q. **H**OW do we consider the Air?

A. We consider the Air not by itself, simply and alone, but as it surrounds us; that is, as it has various Corpuscles mix'd with it, with which it may affect us.

Q. How many Ways does it affect our Bodies?

A. In a double Manner, outwardly and inwardly, and either Way again variously, either by itself, or whether mix'd with other Corpuscles.

Q. Can the Air affect us by the Corruption of its own proper Substance?

A. If the Air is full of watery Vapours, it moistens the Body; if the Air is mix'd with a subtle Æther strongly mov'd, it greatly heats us; if it is mix'd with certain Narcotics, as it happens in some Places, it will affect us with Drowsiness, with a deadly Sleep, and with sudden Death; if it is infected with a pestilential Contagion, it will give us the Plague.

A. Are we not more affected by the Air, than by our Food?

A. As they act in different Ways, we cannot so easily judge in this Matter; but it is certain,

certain, we are greatly affected by both; and, indeed, more constantly, and for a Continuance, by the Air, than by our Aliments; for we can scarcely subsist a Moment without Air.

Q. What Effect hath the Air upon us?

A. It tempers the Heat of our Blood; for, without the Air, we should soon be suffocated.

Q. What Air is best for our Health?

A. Clear Air, fann'd by wholesome Winds, and not infected with ill Smells from Carcasses, Common Shores, and other putrid and corrupt Vapours and Exhalations.

Q. Do not different Ages, and different Constitutions, require a different Air?

A. In a temperate Body, the Air should be temperate; in a cold Temperament, a warm Air is best; and the Contrary in different Constitutions.

Q. Under the Article of Air, do you not comprehend the Winds, the Stars, and their Effects on the human System; and also the Seasons of the Year?

A. Yes, I do.

Q. What is the Wind?

A. The Wind is nothing else than the Air, with the Exhalations and Vapours, contain'd in it, put in Motion about the Earth.

Q. Of what Use is the Wind?

A. It preserves the Air, which otherwise would putrify, and disperses those Vapours that would render it corrupt.

Q. How

136 *The Rudiments of Physick.*

Q. How many Winds do the Seamen reckon in their Compass?

A. Some reckon 24; some 16; others 12; but they are commonly reckoned 32.

Q. Which are the Winds call'd the Cardinal Points?

A. They are four, *viz.* First, the North, which, in our Clime, or Region, is cold and dry.

Secondly, the South, which is hot and moist.

Thirdly, the East, which is hot and dry.

Fourthly, the West, which is cold and moist.

Q. What may be said of the Salubrity of the Winds?

A. The South Wind, in our Region, is very unhealthy, bringing on Torpors, Drowsiness, &c. and oppressing both the animal and vital Actions. It is likewise observable here, both the Northern and Southern Winds, blowing long, have a malignant Influence.

Q. What may be said of the East Wind?

A. In the Morning, with us, the East Wind is very pure and rare, as, at that Time, it blows from that Quarter where the Sun rises. The same may be said of the West Wind when it blows in the Evening.

Q. What do you call a Region?

A. It is a Part of the Earth, on which the Solar Rays fall either more directly, or obliquely, or is remarkably distinct, for some peculiar Quality.

Q. How

Q. How are the Regions divided?

A. They are principally five: First, the Equinoctial Region, situate immediately under the Line.

Secondly, the North; under which we include that Space between the Circle of *Cancer*, and the Artic Pole.

Thirdly, the Southern, or that Space between the Circle of *Capricorn* and the Antarctic Pole.

Fourthly, the Eastern.

Fifthly, the Western.

Q. What Changes hath the Air from the Stars?

A. The Stars have their Changes from the Sun and Moon, especially in the Solstices; upon which you may read Dr. *Mead's* Treatise, *De imperio Solis & Luna*.

Q. How is the Air chang'd in Spring, Autumn, Summer, and Winter?

A. In the Spring, we find the Air receives a remarkable Change, because the Sun begins to shine upon our Part of the Earth with more direct Rays; and because certain active Principles are communicated to the Air, by the Heat of the Sun, which lay dormant, in the Bosom of the Earth, all the Winter; by which Means the Air being heated, is broken into many Parts; and, as it is more and more attenuated by the gradual Heat of the Sun, through its increas'd Motion, requires more Space, is more directly oppos'd

138 *The Rudiments of Physick.*

to the Rays of the Sun, and the Air is thereby more rarified.

Q. What farther Effects hath this vernal Air?

A. As we breath and are surrounded by this Air, impregnated with much subtile Matter, and other various Particles, it gives a greater Motion to the Blood, and yielding more subtile Matter to the grosser Blood, makes it more fluid, by which we are render'd more lively, and better disposed to perform all the Actions of Life.

Q. What do you remark farther of this vernal Air?

A. If any Obstructions are form'd in the Winter Time, they are remov'd by the greater inward Effervescence of the Blood; the Matter obstructed, and obstructing, are again mingled with the Blood; and, as the Mass of Blood is thereby depraved, they bring on Agues, and other Distempers.

Observe, first, we shall easily understand these Things, if we consider the different Temper of the Air, now hot, and then cold; the Blood is hereby more or less heated; and, from these disagreeing Motions, Coagulations and Obstructions often arise.

Observe, Secondly, the Air is most wholesome in *March*, in *April*, and *May*, by how much nearer the Beginning of Summer, so much is the Air more temperate, and the
State

State of the Humours in the Body more perfect.

Observe, Thirdly, that in *July* and *August*, the Air is excessively hot, and therefore unhealthy; for the Blood being hereby supply'd with corrupt Particles, both from the Air and Earth, the regular Union of the Humours are dissipated, and the finer Parts, which were of greater Consequence in the animal Oeconomy, pass off by insensible Perspiration; and, by their Loss, the Blood is corrupted.

Observe, Fourthly, that in Autumn Fevers, and other Diseases prevail; for in *August* the Effervescence of the Blood is continued; but in *September*, through the Coldness of the Air, suddenly thickening the Humours, various Obstructions, and malignant Fevers, arise; because, in the former Season, the Blood was deprived of its Spirits. To this we may add the Fruits that are eaten raw, the Juices of which can neither be digested by the Ferment of the Stomach, nor by the Acid in the Blood, but rather corrupts it; from whence proceed the Fevers and Fluxes, which generally reign at this Time.

(The SUMMER.)

This happens more so, if the Summer has been very hot, and abounded in Fruits.

(WINTER.)

The Winter's cold Air does not totally suppress the Effervescence of the Humours, but leaves sufficient for better performing all the vital Actions; for the Transpiration of the Humours in Winter is less, thro' the greater Pressure of the condens'd Air that surrounds us; but, being confin'd in the Body, renders the Mass more fluid, and fitter to ferment.

The Ferment of the Stomach is sharper, and more plentiful, so that it will easily digest the harder Kinds of Food.

Winter is disadvantageous to the Aged and Decay'd, because of their little Warmth; but healthy to younger Persons; and, sometimes, to Cachectics.

C H A P. III.

Of Meat and Drink.

Q. **W**HAT is Meat?

A. Meat is the more solid and grosser Food, chiefly to satisfy Hunger.

Q. Why do you say chiefly?

A. Because some thinner Kinds of Meat may, in some Measure, allay Thirst, as the thicker Sorts of Drink may appease Hunger. The Necessity of these Things, and how easily

ly we are hurt by them, is well known to all Persons.

Q. Are there various Differences in Foods?

A. There are; for some have good or bad Juices, or are of lighter or harder Digestion, containing much or little Nourishment.

Q. Which is the best, and which the worst Food?

A. The best, is that which contains good Juices, of easy Digestion, and containing the most Chyle; and the Contrary to these is the worst.

Q. Which is the best Bread?

A. That is the best, which is made of good Wheat, of which there are three Kinds, white, second, and brown; there is also a Sort made of Rye; but this is harder and blacker, and sits heavy upon the Stomach.

Q. Which is the best Flesh?

A. Of Quadrupeds, Veal* is the best; after that, Mutton and Kid. Of Birds, &c. Chickens, Capons, Pidgeons, and Partridges, are the best.

Q. Which do you reckon good Fish?

A. Of Sea Fish, the Cod, Sole, &c. of River Fish, the Perch, the Trout, and Gudgeon: Of the Produce of Animals, we have Milk and Eggs; and of Fruits, Figs and Raisins.

Observe, from what has been said, that the Foods here mentioned are not best and most wholesome for all sorts of Persons
pro-

* I think here the Author's Taste has misled him, Mutton being looked on as the most perspirative, and easy of Digestion.

promiscuously; nor is there any that agrees with every Person; but every one is to consider which agrees best with them; for those who have strong Stomachs, or labour much (as Plowmen, Soldiers, and Seamen) find Beef and Pork best, because they produce a more solid and thicker Blood, which carries a great deal of Nourishment, and is not so easily wasted.

Q. You mentioned Fish before, what Sort of Blood do they afford.

A. Though many People think Fish unwholesome, yet they afford a Blood of a good and middle Consistence; they are light of Digestion, if taken from clear Waters, and good for those of a phlegmatick Constitution.

Q. What Order should we observe in our Meats?

A. Those more solid are generally eaten first, because they sooner imbibe the Acid that lies at the Bottom of the Stomach, and are of harder Digestion. As to my self, I am of Opinion, that all the several Kinds of Food we take are confusedly mix'd together in the Stomach, and that the Order of Eating is not long preserv'd.

Q. When is the best Time to eat?

A. When we are hungry, and the Stomach empty. Observe, that some Persons have a Sensation of Hunger when the Stomach is full, through the great Quantity, or Sharpness, of the Acid, which is not natural Hunger, and

this

this is to be suppress'd by Medicines, rather than Diet.

Q. How many times a Day should we eat?

A. This cannot be said in general: Bilious Persons, because their Hunger is more frequent and they are of a drier Nature, may eat moderately three or four times a Day: Phlegmatick Persons, once a Day, because they bear Hunger better, and do not waste so much Blood: Melancholy Persons, may eat twice or thrice a Day, because of their Acidity: Those of a Sanguine Complexion, should observe a Medium.

Q. What Quantity are we to eat?

A. Sufficient to satisfy Hunger, without loading the Stomach; the Quantity of Meats are to be varied according to the Difference of Constitution, Strength and Age; one Quantity agrees best with the Flower of Age, another with old Age; the Weak, the Strong, the Healthy, the Sick, the Bilious, the Phlegmatic, those who labour, and those who study, all require different Quantities of Food.

It is better to eat rather too much, than too sparingly, and rather to allow something to the Gratification of the Palate, than barely to satisfy Necessity and mere Hunger. It is also good to observe that Rule which *Celsus* gives in his Precepts, as the Secret of prolonging Life, and preserving Health; that every one should use Contraries, by Turns, and often Change the Method of Diet; but always inclining

144 *The Rudiments of Physick.*

clining to the most favourable Extreme; that is, should sometimes use a plentiful, and sometimes a spare Diet; but most frequently a plentiful Diet. For thus the Stomach, by Degrees, is accustomed to bear little Excesses, without Trouble, and can also digest more.

Q. What ought to be the Quality of the Food in different Constitutions.

A. The Quality of the Food ought to be varied according to the Difference of Constitution, Age, Time, and Custom: So those who are hot and dry, require cold and moist Food; Children softer than young and full grown Persons; in Summer colder than Winter: And, lastly, for those who are us'd to it, strong Meats are better than the weaker Kind. Boil'd Meats are easier digested than roasted, for they are softer; but roast Meats are more nourishing, because they abound more with nutritious Juices, as appears upon being cut with a Knife, for they have an outward Crust that preserves the inward Moisture, which is dispersed in the Broth of boil'd Meats; therefore roast Meats are best for those that use Labour and Exercise, and boil'd Meats for the Sedentary. But whether Chylification is better perform'd by Day, than by Night, and whether it is best to eat most at Dinner, or Supper; and whether the Food passes out of the Stomach in the same Order it is received into it; and also why we are cold after Eating, &c. may be seen where I treat of Chylification.

The Rudiments of Physick. 145

N. B. Review the Article of Chylification in Physiology, Part I. Chap. VIII.

Q. What is Drink?

A. It is a thin, liquid Aliment, for allaying Thirst.

Q. Mention some Kinds of Drink.

A. The principal Kinds are Water, Wine, Hydromel, or Mead and Beer.

Q. Is there any Nourishment in Water?

A. There is; for many Men live tolerably well with Water only for Drink, and seem to be refreshed after drinking it: And further you may observe, that Fish will live upon Water in an earthen Vessel, and even grow bigger; and it appears that Plants receive their Nourishment from Water, as their Growth often exceeds, in Weight, the Earth the Vessel contains in which they are planted.

Q. What Kind of Water is best?

A. There are many Kinds of Water; but the best is Spring Water, that is clear and sweet, without any Taste, and in Colour like the Air. Some judge of the Goodness of Water by its Lightness; but this is not to be understood of its Weight in a Ballance; for frequently bad Water is lighter than that which is better; that is the best Water, which is grateful to the Stomach and Bowels. Vide Dr. *Martin, Lister*, and other Authors, who have wrote entirely upon this Subject.

Q. What is Wine; what are its Kinds; and what are its Effects?

T

A. Wine

146 *The Rudiments of Physick.*

A. Wine is a Juice express'd from Grapes : There are various Sorts of Wine, and they differ in Heat, Flavour, Taste, Thickness, Thinness, and Age. Wine is hot and dry, unless it is unripe, as Verjuice, for this is cold. The best Wine, is that which is not so austere, or sweet, but a Medium between both. Sweet Wine is very nourishing, is Food for the Breast, but generates Bile : Rough Wine, on the Contrary, hurts the Breast, and is very astringent. Fragrant Wines wonderfully raise the Spirits, but afterwards make the Head ach. White Wine strengthens the Stomach, and other Parts, and improves the Blood : But Red Wine generates Blood, and nourishes more, but causes Obstructions : A thin Wine is more opening than a heavy one, and sooner passes off, but is not so nourishing.

New Wine, or Must, is not so hot as old Wine, but breeds Flatulencies, unless it purges the Belly. Old Wine affects the Head more. Rhenish Wine, by its great Crudity and Thinness, beyond all others, easily excites the Humours to a Flux, and separates them crude from the Mass, and hereby causes the Gout.

2. What is Beer, its Kinds, and Qualities ?

A. Beer is made of Water, Malt, and Hops, brew'd together ; Hops are added, because it preserves the Beer, and purifies the Blood ; and, according to their different Quantity, is called Beer, or Ale.

That

That Beer is most wholesome, which is well boil'd and wrought; for if it is not well wrought, it breeds Obstructions, and causes Gripings. Some Beer is stronger, other smaller, according to the Quantity of Malt in each; some is higher colour'd, and another paler, according as it is boil'd a longer or shorter Time.

Q. What is Mulsa, or Hydromel?

A. Mulsa, or Hydromel, is made of Water and Honey; one Kind has much Honey, another little; one Kind is boil'd and scum'd, another Sort is made only by standing in the Sun, but this is cruder, and occasions Obstructions; that which is boil'd, is grateful to the Breast, and good to remove Obstructions.

Q. What is Cyder, or Wine of Apples?

A. It is made of the Juice of Apples, either acid, or sweet, squeezed out by a Press, or Mill, and afterwards fermented and cleans'd from the Fæces like Wine. This Liquor is cold, but warmer, if made from sweet Fruit: It is pleasant, but affects the Head.

Q. How much, and in what Manner, are we to drink?

A. We ought to drink a sufficient Quantity to moisten our Meat; for the dry Food is not so well dissolved, because the Acid of the Stomach does not penetrate it thoroughly.

On the Contrary, if we drink too much, the Acid is too much dissolv'd and weakened, and is carried out of the Stomach before the Meat,

148 *The Rudiments of Physick.*

Meat, which floats in the Stomach, and so its Dissolution is hindred.

But it is best to drink a little, often, between Eating, than to drink one, or two large Draughts at the End of a Meal; for by this Means the Aliments are better mingled, and Digestion assisted.

But I am not so rigorous as some, in forbidding the least Draught of Liquor before Meals, especially where the Stomach is dry, for that Liquor is as well mingled with the Aliments, as if it was taken after eating a little; but it is not good to drink before Eating, because it washes the Acid out of the Stomach, before the Meat comes into it.

Drinking after Dinner is condemn'd by many, but very few abstain from it; but it is certain, that it disturbs the Chylification, and washes off the Acid that is employ'd in perfecting the Chyle.

Yet we may safely drink a little after Dinner, if the Digestion is over, or almost finish'd, and especially if we are very thirsty.

Q. Is the Excess in Meat, or Drink, of worst Consequence?

A. I reply, that it is most dangerous to exceed in Eating, for it so relaxes the Fibres of the Stomach, by a daily Expansion, that afterwards it will not digest the Food; and also because it leaves after it more Crudities; whence follow Obstructions, vitiated Concoc-
tions,

tions, &c. but Excess in Drink, as it sooner passes through the Body, so the Effects of it may be sooner remedied, and carried off.

C H A P. IV.

Of Sleep and Watching.

Q. WHAT is Sleep?

A. Sleep is the common and ordinary Indisposition of the Senses to Action.

Q. Why do you add common?

A. That I may exclude the Apoplexy, Lethargy, &c.

Q. What is the Cause of Sleep?

A. Sleep is a Relaxation of the Fibres, of which the Brain is chiefly compos'd, so that the Motions then impressed on the Organs of the five external Senses, cannot be propagated to the Seat of the Soul, and be there known in the same Manner as the Motion given to a String unbraced, is not so readily promoted, as if it was wound up strongly.

Q. What is the Cause of Sleep, and whence does it proceed?

A. It proceeds from the animal Spirits not sufficiently inflating and expanding those fine Tubes, either through their failing entirely, or through their Sluggishness and Fixation.

So,

150 *The Rudiments of Physick.*

So, according to this Account, after Labour we are inclin'd to Sleep for Want of Spirits (unless the Spirits are preternaturally active) We are affected in like Manner after taking Opium, or other Narcotics, because such Things, with their volatile, oleous Quality, seize and fix the Spirits. Lastly, after Eating and Drinking we are commonly inclin'd to Sleep, because then the Moisture of the Brain is encreas'd, which relaxes the Fibres; and, perhaps, also because the Vapours do give some Obstruction to the Spirits. Yet there are some Persons who, after drinking plentifully * (unless the Wine contains some narcotic Quality) sleep uneasy, because the Spirits are inflam'd by the Heat, and rendered more fervid.

The Necessity of Sleep, to support Life, appears from hence; that we cannot live without it, as it recovers the animal Spirits which are wasted in waking, by the Operation of the external Senses and animal Motion; not that we generate more Spirits sleeping than waking (for I believe we generate most Spirits waking, through the greater Motion of the Blood, and Tension and Porosity of the Brain) but because so many Spirits are not wasted in Sleep, when we are without Sense and voluntary Motion: But Sleep ought to be moderate; that is, in Proportion to every Person's Constitution and Consumption of Spirits.

Q. What

* These are Persons of sanguine and bilious Constitutions.

Q. What is the Effect of common and moderate Sleep?

A. It strengthens and moistens the Body, and makes Men active in their several Employments; but too much Sleep dulls the Spirits, moistens and relaxes the Brain too much, and makes Men stupid and heavy; and, on the Contrary, too little Sleep destroys Moisture, emaciates and weakens the Body. That Sleep gives Moisture to the Body, no one will think strange; for by the lesser Influx of Spirits in Sleep, all the Parts are relaxed, and therefore the Pores more open; and also the Heat being less in Sleep, there is not so great a Waste of the Humours.

That we have less Heat in the Time of Sleep, I have prov'd, where I treat of natural Heat; but that the animal Spirits do not flow equally into the Habit of the Body, sleeping or waking, proceeds from this, that then the animal Motions gradually decrease, because nothing involuntary determines the Soul to send the Spirits into the Muscles; and therefore the Muscles of the whole Habit are only supplied with that Proportion of Spirits, which is constantly sent forth by the Brain, upon their being newly formed there, and which continually flows forth slowly into the Nerves for the Performance of their necessary Actions.

Q. In what State is the Soul in true Sleep?

A. In true Sleep, the Soul ought to be as conscious of nothing, and, in a Manner, stupified,

152 *The Rudiments of Physick.*

pified, that is, at least, not to perform any notable Operations; and if at any Time we talk and reason in our Sleep, or get up and walk in a Dream, as some People do, that Sleep is imperfect and disturbed; so we see such Persons are scarcely more refreshed by it, than if they had been awake.

Many are of Opinion, that the Soul always thinks, and affirm, that its Essence consists in Thought, so that without it, it would cease to be; but that the Thought is weaker, or only less perceptible to us, wherefore it always thinks something, in an apoplectick Fit, and even in the Fœtus, that otherwise it is not intelligible how the Soul can be determined to think by a corporeal Substance, because then the more ignoble Cause would produce the more noble Effects.

The vital Actions continue nevertheless in Sleep, *i. e.* the Motion of the Heart, the peristaltic Motion, Digestion, &c. because these are perform'd independent of the Soul, and chiefly by the Spirits flowing from the Cerebellum, which are not governed by the Soul.

2. How do we take sound and quiet Sleep?

A. Sound and quiet Sleep is conveniently taken at Night, in a soft Bed for thin and dry Constitutions, and in harder Beds for those who are fat, with the Head higher or lower, according as the Parts of the Body are affected with such or such a particular Way of Lying.

Q. Is Sleep in the Day so unwholsome as some People imagine?

A. Many forbid Sleep in the Day, and chiefly after Dinner, as if it hurt the Head, and dull'd the Senses; but I do not think it so bad, especially in those who are accustom'd. to it; for by this Means the Spirits and Strength, that were wasted with Labour and Care, are recruited; and, indeed, it is now become a Custom, among most of the highest Rank, to sleep a little after Dinner; and they find Benefit by it. And there appears no Reason why it should be worse than at Night, unless we may say it hinders the Night's Rest, and makes it troubled and uneasy.

Q. How long are we to indulge ourselves in Sleeping?

A. The Time of Sleep should be commonly seven Hours; for in that Time the Digestion is, for the major Part, perform'd, and the Chyle distributed, to supply the Waste of the Spirits and Humours.

A longer Time of Sleep is convenient for some, and a shorter for others; so more Sleep is convenient for Children; because, thro' the Thinness of their Skin, they perspire much; and also, because they are naturally very moist: More Sleep is also necessary for the Aged, the Bilious, and Dry, because it moistens the Body, and restores the Spirits; the Fat and Phlegmatick require less Sleep; also those who are weary, ought to sleep longer.

U

Q. What

154 *The Rudiments of Physick.*

Q. Which Side is it best to sleep on?

A. This depends chiefly upon Custom.

Q. What is Waking?

A. Waking is the nearest Disposition of the outward Senses to Action ; I do not say it is the Action of the Senses, because I think a Person may be actually awake if he was shut up in a Cave, where he should neither see, hear, smell, taste, nor feel ; or where he should not attentively think of any Thing, and yet such a Person could not be truly said to be asleep ; or else we ought to say, that Waking is the Operation itself of the outward Senses, and Sleep its Cessation.

Q. What is the Cause of Waking?

A. It is a due Tension of the Fibres of the Nerves, effected by the Influx of the Spirits, so that the Motion impressed upon the Organs of the external Senses may be easily propagated to the Seat of the Soul, and there perceived ; whence those are troubled with obstinate Watchings, who have the Spirits too swiftly moved in the Brain, as in Fevers, Want of Food, Frenzy, whether they are in themselves too hot, lively, or passionate, or whether they have a Mixture of these.

Q. What Inconveniencies are produced by immoderate Watching?

A. Too much Watching, by evaporating the Moisture of the Body, renders it thin and dry, and introduces Crudities, and weakens the Brain.

C H A P. V.

Of Motion and Rest.

Q. **W**HAT is meant here by Motion?

A. Motion here is taken for Labour and Exercise.

Q. What kind of Motion is best?

A. Walking, Tennis, Running, Riding; and it is best when it makes us perspire freely; for such a Motion excites the native Heat, and evaporates all crude Humours.

Q. What is the Reason we breath quicker upon Motion?

A. Because the Blood, by the Action of the Muscles, is driven with more Celerity to the Heart, by the Compression of the Vessels, and so, growing warmer, by a quicker Passage through the Heart, it irritates to a more frequent Respiration.

And then, because such a strong Influx of the Spirits into the Nerves, that serve for this Action, cannot be perform'd, but it must be something encreas'd in the Nerves serving to Respiration, especially in those of the Par Vagum, and because, through the Continuance of Respiration, the Passage of the Spirits to the Brain is very easy, and because this Nerve, above all, is very much compounded in its first Rise, therefore it receives the Spirits.

Q. What

156 *The Rudiments of Physick.*

Q. What is the fittest Time for Exercise?

A. The best Time is the Morning, with an empty Stomach; for, by this Means, if any Thing remains in the Stomach of the former Digestion, it will be carried off; but if we use Exercise upon a full Stomach, it will breed Obstructions and corrupt Humours; and therefore Motion is thought hurtful soon after Dinner and Breakfast; and, in general, before the Digestion is over: Yet the Ancients used Exercise chiefly after Dinner; but their Custom was the Reverse of ours, for they made their chief Meal at Supper, and eat sparingly at Dinner.

Q. Is not too much Motion hurtful; or is not a gentle Walk good after Eating?

A. Too much Motion is hurtful, because it dries and weakens the Body, and dissipates the Acid of the Stomach; but we may take an easy Walk after Meals, that the Food may sit easier upon the Stomach.

Q. Is not Motion therefore necessary?

A. Most certainly; for it appears, by what has been said, that it is necessary to preserve Health; and if it is duly perform'd, our Health will be affected accordingly.

Q. What is the Effect of unreasonable Rest?

A. It generates bad Humours, it stuffs the Passages with Dregs, and renders us unactive.

Q. When is it proper to rest?

A. After

A. After being tired, and when the Chylification is not wholly distributed.

C H A P. VI.

Of the Excretions and Retentions.

2. **W**HAT do you understand by the Excretions and Retentions?

A. The Excretions are the Fæces of the Bowels, the Urine, insensible Perspiration, the Menfes, and the Seed; for these being excreted in proper Time, and due Quantity, do much conduce to Health, otherwise they impair it.

2. What is the Consequence of too long Retention of the Fæces, and how should they be found in a good State of Health?

A. The Fæces not being voided in due Time, occasion Cholic Pains, and a stinking Breath, from the foul Steams arising to the Stomach and Mouth. In their natural State they are soft, and adhering; of a yellow Colour, not too strong a Smell, and in Quantity nearly equal to the Food we eat.

2. Of what Quality is the Urine in a good State of Health, and what is the Effect of its being too long retained?

A. The Urine, in its proper State, is of an amber Colour, of a moderate Consistence, either

158 *The Rudiments of Physick.*

ther without, or with, a Sediment, and that should be white, smooth, and equal. The Quantity of Urine should be in Proportion to our Drink; if too long retain'd, either thro' the Defect of the Kidneys, or Bladder, or that it is not separated from the Blood in sufficient Quantities, it causes the Dropsy, fainting Fits, sleepy Disorders, and the Palsey.

2. What Detriment does the Body receive for Want of insensible Perspiration?

A. Without insensible Perspiration, the Skin grows foul, an Itching arises (as frequently happens in the Small-Pox) and also Scabs, Dropsy, and Fevers, &c. for insensible Perspiration is perform'd by the Pores of the Skin, and by the Mouth; that we daily emit much Matter by insensible Perspiration, appears from the Inspection of the Breath in Winter Time, when it is condens'd into a Vapour as it passes out of the Mouth; also from its falling upon a Looking-Glass, which is presently wet with a great Number of Drops; also, if we touch bright Tin, or any other polish'd Metal, with the Tip of a Finger, it will presently receive a remarkable Moisture; and if this be done by so small a Part, in so small a Time, how much may we not suppose it to evaporate from the whole Body in one Day's Time? But the Perspiration does not appear to be so great as *Sanctorius* says he found it by Statics; for he will have the insensible Perspiration to be greater than all the other

other Evacuations taken together; for, if what we eat and drink in one Day weighs eight Pounds, he says, that five will pass off insensibly.

He also says, that the Urine of one Night is commonly eight Ounces, and Fæces four, but the insensible Perspiration, at least, forty Ounces; so that the Evacuation, this Way, is fifteen times more in one Night, than by Stool.

Q. What are the various Circumstances that attend the Menfes?

A. Women in general have them from the Age of fourteen to fifty, unless they are with Child, or give Suck, in which Case they cease. They use to flow every Month, or thereabouts, *i. e.* every 22 or 30 Days; and the Quantity ought to be proportioned to the Heat and Abundance of the Blood; for it cannot be confined to any limited Quantity, for in some they are more, in others less.

Nor do they continue an equal Time in all, for in some they last two Days, in others three or four, in others they are not over till the 6th or 8th Day.

They who have them in Excess, are weakened, and have fainting Fits; they fall into a Consumption, &c.

They in whom they are suppress'd, become hysterical, breath difficultly, grow pale, and have their Appetites deprav'd, &c.

Q. What

2. What Effects does moderate, or immoderate, Venery produce ; and whom does it most agree with, and at what Time ?

A. It agrees best with those who are of a sanguine and full Habit, and in the Morning after Sleep ; and this conduces to Health ; but immoderate Venery emaciates the Body, weakens the Head and Nerves, dissipates the Spirits, and greatly shortens Life ; but those of a sanguine Complexion, &c. may use it as before-mentioned, after the Digestion and Distribution of the Chyle, for then the Seed is more perfected, and more abounding.

C H A P. VII.

Of the Affections of the Mind.

2. **W**HAT do you understand by the Affections of the Mind, and why are they necessary, and with whom do they agree ?

A. That Impetus, or Motion of the Mind, that occasionally happens to the Soul, which we call Affections, or Passions of the Soul, are various, which have essentially join'd with them a certain Alteration of the Blood, and of the Spirits in the Brain, because the Soul is more affected by them than by the sensitive Thoughts ;

Thoughts; some greater or more vehemently affecting; others lighter were necessary for the Preservation of Life; for it is necessary that the Blood should not always have the same Motion, but sometimes greater, and sometimes less, that so the Strength and Heat might be preserved, or recovered, or rendered more active, and also that, being used to these Motions, we should not be so easily hurt by the greater, or less Motion of the Blood and Spirits.

But all the Passions are not good, or bad, to all Persons alike; for Joy is very good for melancholy Persons, to whom Fear and Grief are hurtful.

Thus Anger is good for the Phlegmatic, that so their weak Heat may be corrected, but is hurtful to bilious Persons.

Q. Whence spring these Affections of the Mind?

A. They spring chiefly from a certain Apprehension of Good or Evil, Present or Future, which produces a Variation in the Influx of the Spirits out of the Brain into the Nerves, and also in the Motion of the Blood, and other Parts, as I have before explain'd concerning the Spirits, in Physiology.

Joy, Envy, and Ill-will, spring from an Apprehension of present Good: Hope, and Love, from an Apprehension of some future Good: Grief, Sorrow, and Pity, from an Apprehension of present Evil: Fear, Shame,

162 *The Rudiments of Physick.*

and Despair, from the Apprehension of future Evil.

Q. Which are the principal Passions of the Mind?

A. They are, Joy, Sorrow, Anger, Love, Hate, Envy, Hope, and Despair.

Q. What is Joy, and what Effects does it produce in the Body?

A. Joy is the Pleasure we receive on Account of some Good we believe we have obtain'd: This principally conduces to Health, if it is moderate, as in this Affection the Spirits dart forth, as it were, willingly into all the Nerves, as well within the Brain, as without, especially into the Nerves peculiar to the Heart, and the Constriction of the Vessels, which has this further Effect, that the Blood is push'd forwards through the Body by a grateful Motion, and all the Parts, as it were, rejoice, being over-spread with a grateful Warmth.

But too much Joy is bad, and sometimes hath been the Cause of sudden Death, by too strong an Irruption of the Spirits into the Fibres of the Heart; for if the Heart remains too long constricted, it does not give a Passage to the Blood, and so the Heat of the Heart is extinguished, and the Blood near the Heart coagulated. Or else, when the Blood out of the Veins enters the Ventricles of the Heart with Violence, in too great a Quantity, and by being too much rarefied, by dilating them

them beyond Measure, it hinders the Influx of the Spirits into the Nerves that constrict the Heart, and thereby prevents the Expulsion of the Blood.

This Definition does not only comprehend the Joy we receive for the Good only that happens to ourselves, but also for the Good, or Evil, that happens to others, according as their Good, or Evil, is grateful to us: Nor does it exclude the Joy we conceive from the imaginary Possession of some future Good in Imagination; for such a Thought is esteem'd as a present Good.

Q. What is Sorrow?

A. Sorrow is the Pain we suffer for some Evil with which we believe ourselves affected; in Sorrow the Spirits are faintly mov'd, both in the Brain, and in the Nerves, for which Cause they flow more faintly to the Nerves of the Heart, and do not give it a sufficient Constriction for the due Circulation of the Blood.

Hence further, there is an Oppression of the Breast, and, as it were, a Suffocation, from the Stagnation, or more sluggish Motion of the Blood about the Heart, and Death ensues from the Coagulation of the Blood in the Vessels: Hence the Pulse is small, the Face is pale, and the remote Parts of the Body are cold; the Eyes are sunk, and all Vivacity is lost, &c.

Q. What is Anger?

X 2

A. It

164 *The Rudiments of Physick.*

A. It is a Desire of Revenge from the Apprehension of some Injury received. In Anger, the Spirits of the Brain are violently agitated and dispersed, through the Passages of the Brain, into the Nerves: Hence the Eyes sparkle, and are inflamed; in some the Forehead is wrinkled, and the Pulse grows quicker and stronger; some turn pale in the Beginning of their Anger, grow cold, and shiver; these angry Persons are the most dangerous, and they are thus affected, through Sorrow that they cannot have their Revenge, or that they fear the ill Consequences of their Revenge; but when such Persons take their Revenge, by how much they are colder and paler at first, so much more are they afterwards inflam'd. Some again weep, when they cannot revenge themselves in their Anger; either because in such, through Sorrow, the Pores of the Glands are shut up for Want of a sufficient Inflation from the Spirits; and so the Vapours, that used to perspire freely, are collected together in greater Quantities; or that the Blood, in Anger, being more swiftly and violently impelled on the lachrymal Glands, separates a larger Portion of the Serum into the lachrymal Tubes.

2. What is Love?

A. Love is the earnest Desire of an Object, which we endeavour to obtain as good and desirable, and convenient. In Love the Blood, as well as the Spirits, both within and with-
out

out the Brain, are agitated by a pleasing Sensation, the Body grows warm, and the Pulse becomes quicker and livelier, and often changing from the unequal Flow of Spirits out of the Brain, they impress various agreeable Ideas on the Mind; whence also proceeds those various Motions and Glances of the Eyes, that of themselves express the Symptoms of Love.

Q. What is Hate?

A. The Aversion of a Thing, or Person, which we esteem as hurtful, or offensive to

us.

Q. What is Envy?

A. Envy is Sorrow for the Good of another, together with a pleasing Satisfaction for his Misfortune; it hath the same Effect on the Body as Joy and Sorrow.

Q. What is Fear?

A. Fear is a Depression of the Mind, thro' the Apprehension of some great Evil; here the Blood circulates very irregularly, because the animal Spirits are, as it were, stopp'd, or retarded, in the Brain; whence proceed a slow Pulse, a Trembling of the Limbs, Chilliness, cold Sweats, Paleness, and Unfitness for Exercise and Motion, and this to such a Degree, that sometimes Death ensues.

Q. What is Shame?

A. Shame is a strong Opinion, or Apprehension of Scandal: In this Affection the Spirits flow likewise very unequally into the Nerves,

166 *The Rudiments of Physick.*

Nerves, so that they are sometimes, as it were, fix'd in the Brain, and then again flow out plentifully; so that, in Shame, the Face is pale, and then red alternately: It is certain that the Heart and Brain are greatly affected by Shame, because it may keep the Heart too much constricted, or not enough to continue Life, and the Circulation of the Blood; whence it often causes Death.

Q. What is Hope?

A. Hope is the Desire of future Good, as being difficult, yet possible to be obtain'd. This gives an agreeable Flow of Spirits, both within and without the Brain.

Q. What is Despair, and how does it affect us?

A. This is an Affection arising from the Apprehension of Good, which we judge impossible to be acquired. Here the Spirits being, as it were, imprison'd in the Brain, do not sufficiently constringe the Heart as they ought, but the Blood, as it were, stagnating in the Heart, and the neighbouring Vessels, creates a Sense of Dread and Horror.

Q. Do not the Affections of the Mind act greatly on the Brain, the Motion of the Spirits, and the Motion of the Heart?

A. It appears, from what has been said upon the Affections of the Mind, that they affect the Brain, and the Influx of the animal Spirits, and, consequently, the Motion of the Heart, and the Circulation of the Blood.

Q. Why

Q. Why hath the Soul no Power, or very little, to govern these Passions?

A. Because, as has been mentioned before, they are chiefly perform'd by the Motion of the Heart and Blood, which depends upon the Flux of animal Spirits from the Cerebellum; especially from the Nerves of the Par Vagum, which are not govern'd by the Soul. This Flux is therefore involuntary, as I have frequently affirm'd; nevertheless it is of such a Nature, that it changes the Motion of the Heart upon a very slight Commotion of the Spirits in the Brain; partly because the Passage of these Nerves is more open, and their Filaments more numerous at their first Origin; and partly because there is a mutual Communication and Transmission of Spirits between the Cerebrum and Cerebellum; for the animal Spirits being mov'd in the Cerebrum, excite the Spirits in the Cerebellum, and protrude them into the Nerves of the Par Vagum; and hence is the Cause why in Love, Joy, and other Passions of the same Nature, the Spirits flow out of the Cerebrum, through the Nerves of the Par Vagum, in greater Plenty, which are distributed for the Use of the other natural Functions.

In Hate, the Soul checks them in the Brain; for whilst the Soul loves, it unites with the animal Objects, or Desires, to cleave to the Ideas of the beloved Object; from whence the Thoughts arise calm and joyful, and the Soul
entices

168 *The Rudiments of Physick.*

entices forth the Spirits to preserve such Ideas, by which the Soul is more strongly affected by them; when it further happens that the animal Spirits being mov'd in the Cerebrum, successively yield other Spirits from the Cerebrum to the Cerebellum, and from that sends them into the Nerves of the Par Vagum, by which the natural Actions are encreas'd. But, in Hate, when the Soul does less desire to form the Ideas of the Object, and is not affected by them, then the Spirits in the Cerebrum and Cerebellum are more sparingly distributed into the Nerves, which produce such Changes in the Body, as are the Reverse of Love.

Q. How are the Spirits affected?

A. The Motion of the Spirits are affected in the Brain, as well by external as internal Sensations (whether by the pure Knowledge of the Soul, which happens without the Assistance of the Spirits, and consequently is not to be consider'd as a medical Enquiry, nor is manifestly subject to our Knowledge, I do not here enquire) in which, by a strong Impression of the Spirits of any Object in the Brain, it is represented more clearly to the Soul.

For as soon as the Soul perceives any Good or Evil proceeding from this or that Object, presently the Imagination is augmented, thro' the greater Influx of Spirits confirming those Impressions, and forming others, by which it discovers the Truth of that Good or Evil, by which the Motion of the animal Spirits in the
Cerebrum

Cerebrum being varied, the Motion of the Spirits in the Cerebellum is also varied; to which Mutation the Diversity of external Objects conduces; from which various Passions proceed: Nevertheless the same Object may at different Times produce different Operations in the same Subject.

Q. Are not certain other Affections reducible to this Class?

A. Yes, many, which produce the like Effects in the Body, and of which the same Account is to be given: For Instance, such is Ill-will, or Malevolence, which is a certain Aversion and Alienation of one Person from another: Pity, which is Pain for the Evil of another. But he that would know more of this Subject, must apply to Philosophy.

Q. How do the Passions of the Mind differ in themselves?

A. The Passions of the Mind do not really differ in themselves, nor from the other Sensations; for, in Reality, it is the Soul itself that seeks Good, and shuns Evil; but only in one Circumstance it is accompanied with a greater and more violent Influx of the Spirits; and, in the other, with a lesser and slower. Indeed almost every Sensation depends on the Influx of the Spirits, and the Alteration of the Blood.

Q. May not the Passions of the Mind be also called external Actions?

Y

A. Al-

170 *The Rudiments of Physick.*

A. Although the Passions of the Mind are internal, animal Actions, they may sometimes be called external, considering that, by their Means, the Soul is affected, and suffers from external Objects.



P A T H O.



P A T H O L O G Y:
THE
T H I R D P A R T
OF THE
RUDIMENTS of PHYSICK.

C H A P. I.
Of the Things contrary to Nature.

Question.



H A T are the Things contrary to Nature?

A. The Things contrary to Nature, are those Things that are injurious to the natural Constitution of the living Body.

Q. How many Things are reckoned contranatural, as the Heads under which all the others are reduced?

Y 2

A. They

172 *The Rudiments of Physick.*

A. They are three: A Disease; the Cause of a Disease; and the Symptoms; under which Heads every Thing contrary to Nature is comprehended.

Q. Do not Contraries better explain each other, by being compared together?

A. Most certainly.

Q. Would it not then answer our Purpose better to say something of the Things agreeable to Nature, before we treat of the Contranaturals?

A. You are in the Right; for the essential Differences of a Disease proceed from thence; and thus the Things agreeable to Nature, and contrary to Nature, will explain each other: Therefore I say, that the Things agreeable to Nature, are also three (the same in Number with the Contra-naturals) *viz.* Health; the Cause of Health; and the Effects of Health.

Q. What is Health?

A. Health is a peculiar Structure of the living Body most agreeable to Nature, by which all the Actions are duly and mechanically performed.

Q. Ought not all the Actions to be rightly and mechanically performed?

A. That any Person may be said to be in Health, he ought to perform all his Actions rightly; for if there be a Defect in the least, he is no longer in Health: For Health is a certain Good to the Body; but a Good that depends

depends on the entire Cause; and the opposite Ill depends on every single Defect.

Q. What is it you understand here by Constitution?

A. The Constitution is something resulting from the due Temper, Formation, and Union, of all the Parts of the Body, by which we are rendered fit to perform all our Actions rightly.

This cannot be taken for the Union of the Soul with the Body; for this is in sick Persons, as well as to those in Health, where, nevertheless, the Actions of the Body cannot be duly perform'd.

Q. What do you mean by the Actions being rightly perform'd, as here understood?

A. I mean, that every one in particular should perform his Actions agreeable to his natural Constitution; but this cannot be universally the same in all Persons: As for Instance, the Tone of the Stomach, and the Eyes of an old Man, he does not digest, and see, so perfectly as a young Man may be said to do; yet, with Regard to both the old and young Man, they may be in Health, because it is such as the natural State of Age requires and permits.

Q. What is the Subject of Health?

A. The Subject of Health, is the living Body, and its Parts, both solid, and fluid; for they alone are said to be healthy.

Q. Does

174 *The Rudiments of Physick.*

Q. Does not Health consist in a certain Mean, which is neither strictly homogeneous, nor altogether uncompounded.

A. Health consists in a certain Mean, which is not absolutely the same in every Individual, but hath its Latitude and Varieties; for every Constitution hath its Medium, agreeable to which Health may be divided; so that the Phlegmatic hath one State of Health, the Bilious another; the young Man one, the Old another; according to the several Varieties of Temperaments and Constitutions, and the Proportion of Health in this or that State.

There is also one Health of a similar Part, so far as it is not organical; another of an organic Part, as it is not similar; for the first, for its Health, requires a due Temper, and Union of Particles; the latter, a due Conformation, *i. e.* a just Magnitude, Number, Figure, and Position, besides the due Union.

Lastly, there is one Health of the Whole, another of a Part only; for more Things are requir'd for the Health of the Whole, than of a single Part; for a Man may be sound, or have Health, in one Part, at the same Time he is sick in another.

Q. What is therefore requir'd for the Health of the whole Body?

A. For the Health of the whole Body, there is requir'd a due Temper of all the Parts, a due Formation, and a due Union; and,

and, these being possess'd, all the Actions are rightly perform'd.

Q. May the Body be said to be healthy, when it hath a due Temper of all the Parts, or a due Formation?

A. It appears, from what has been said, that it may not; as more is required to Health, than a due Temper, or a due Formation; for a Man may have a due Temper, and not be healthy: For Instance, if he has not a due Formation, but some Part exceeds in Magnitude, Number, Figure, or Position. And in like Manner a Man may have a right Formation, and not a due Temper.

Q. What do you understand by the Cause of Health?

A. The Cause is understood from what has been already said, *viz.* a due Temper of the first Qualities in the Body; a due Formation; and the Union of all the Parts of the Body.

Q. What do you understand by the Effects of Health?

A. The Consequence of Health is, when the Actions, the Excretions and Retentions, and the simple Affections of the Body, are all in their proper State.

C H A P. II.

Of a Disease.

Q. **W**HAT is a Disease?

A. A Disease is præternatural to the Constitution of the living Body, in which all the Actions of the Body are not duly perform'd.

Q. What do you understand by Constitution?

A. In the same Manner as I explain'd a Constitution of Health; so here again, by Constitution, ought to be understood something resulting from an irregular Temper, Formation, and Union of the Parts, in which some Action is ill perform'd, or is not well proportioned, and we are render'd unfit to perform all our Actions rightly, or duly, according to the natural State of every particular Person (allowing for proper Exceptions.)

Q. Is it requir'd, to form a Disease, that all our Actions should be impair'd?

A. It is not said, in which all the Actions, but in which some are impair'd, because it is not required, to form a Disease, that all our Actions should be impaired, but one alone is sufficient; for the Ill depends on every single Defect.

Q. What

Q. What do you mean by (allowing for proper Exceptions?)

A. It excludes the Constitution of old Men, and young Children; for they do not duly perform their Actions; but this is according to the Course of Nature, at such an Age.

Q. What is the Subject of a Disease?

A. The Subject of a Disease, is the living Body, its solid, and fluid Parts; and it is these that are called Distemper'd.

Q. Is not the Soul also the Subject of a Disease?

A. The rational Soul is created perfect, but if its Actions should be impaired, it must proceed from some Defect of that Body, or Organ that it makes Use of to perform its Operations.

Observe, That I do not treat of similar Diseases proceeding from an irregular Temper, nor of organic Diseases from an undue Formation, nor of the Union destroy'd; because they properly belong to Surgery, which Art professes the Cure of Wounds, Ulcers, Fractures, and Fissures, &c.

C H A P. III.

Of a universal, and of a particular Disease.

Q. **H**OW are Diseases divided from the Consideration of the Place affected?

A. One Disease is universal, another is particular; one is proper, another is common; one is internal, another is external.

Q. What is a universal Disease?

A. A universal Disease, is that which affects the whole Body, as a Fever, a Chachexy, an Anasarca, &c.

Observe, That it is not required in a universal Disease, that all the Actions, both animal, and natural, should be impair'd; altho' it be difficult to hurt one, and not the other, because of their mutual Dependance.

Q. What is a particular Disease?

A. A particular Disease, is what affects only a Part of the Body, as the Hydrocephalus, the Pleurisy, &c.

Q. What is an external Disease?

A. That which is confin'd to the external Parts of the Body.

Q. What is an internal Disease?

A. An internal Disease, is that which is confin'd to the internal Parts of the Body; as the Gravel, the Bloody-flux, &c.

C H A P. IV.

Of Diseases contagious, and not contagious.

Q. **W**H A T is a contagious Disease?

A. A contagious Disease, is that which is propagated from one Body to another by Contagion; as the Plague, the Leprosy, the Pox, the Pthick, the Madness of a Dog, the Itch, &c.

Q. What is Contagion?

A. Contagion is a Corruption, or certain Effluvia emitted from a distemper'd Body, distinct from the Seed, the Aliment of the Foetus, and the Milk, by which a Disease may be communicated from one Body to another.

O B S E R V A T I O N.

Contagion is the Seminary of a Disease, and it ought to contain its whole Force and Energy, and a great Power, in a very small Bulk: And it happens that, for Want of this, every Disease is not contagious; notwithstanding which, there is scarce any Disease without some Effluvia peculiar to it.

Q. Why, in the Definition, do you say, distinct from the Seed? And also, Why from a distemper'd Body, &c.

Z 2

I say,

180 *The Rudiments of Physick.*

A. I say, distinct from the Seed, first, because a Disease that is given with the Seed, in the first Formation, is properly call'd an hereditary Disease; but, if communicated to the Fœtus with the Nourishment, or given to an Infant with the Milk, then it is call'd Connutritious, or what is brought on by Nutrition.

2. In what Manner is a Disease call'd Infectious, from Contagion?

A. Not because it ought first to be produc'd by Contagion (for the Plague, inflicted by Heaven, is a contagious Disease, though not produced originally by Contagion) but because it hath the Power to produce the Contagion itself, and, by Means thereof, communicate itself from one Body to another.

2. Is not Contagion always taken for the same as Corruption?

A. Contagion is not the same Thing as Corruption; but this last is of a more extensive Nature, for there are several Things of a destructive Nature, that are not contagious; For Instance, certain Poisons from Animals, Plants, and poison'd Arrows; or from dead Carcasses, and other corrupt Bodies, which are not properly call'd contagious, as they do not flow from any sick Body, nor are produc'd in it by a like Disease.

2. Does all Contagion arise from Putrefaction?

A. Contagion does often arise from Putrefaction, but not in all Cases; for some Things

In a Body may be so exalted, and receive such a Figure by divers Ways, without Putrefaction, that they may have the Force of Contagion; for the Effects of a pestilential Contagion is found to consist in a certain Set of Particles, which have been compared, in Sharpness, to the Shape of Penknives *.

Q. May not Contagion be generated in a living human Body?

A. It may, and that from the Blood, the Seed, and other Parts; from whence it appears to be very difficult, and, indeed, impossible, to say certainly whether a contagious Disease is produced by external Contagion; or, more probably, from internal Causes.

Q. Is not a Contagion emitted various Ways from one Body to another?

A. Contagion is emitted various Ways from a sick Body: For Instance, by the Pores of the Skin, with the Breath, with the Spit-
tle, the Fæces, the Urine, Putrefaction, &c. It enters the Body either with the Air we breath, or by the Pores of the Skin, and that in various Ways; for one Contagion is of such a Nature, that it is communicated only by immediate Contact, as that of the Bite of a mad Dog; another is transferr'd by Cloaths,
Linnen,

* Contagious Particles have been termed very acute, from whence arises the Baldness of this Comparison: But the Doctrine of Effluvia and Contagion have been treated of so very accurately, by many late Authors, it would be needless to make further Comment on it in this Place.

182 *The Rudiments of Physick.*

Linnen, &c. as the Itch, and the Leprosy: Lastly, another is propagated at a great Distance, as the Plague, &c.

2. Is it enough for a Contagion to take Effect, that it enters any Body, or is there something further necessary?

A. The Agent does not act on every Body, but such only as are fitly dispos'd; so that there is moreover required a Disposition in that other Body, that it may effectually penetrate it, and be agitated by it; and, without this Disposition, it takes no Effect; so that it often happens, that a Man may receive the Contagion into his Body, and be no Ways affected with the Disease, but it may be expelled again by Perspiration, Urine, Spittle, &c. Also, sometimes, it may remain a long Time in the Blood, without producing any Struggle, because these Miasmata, or contagious Vapours, may be destin'd to infect the denser Parts, and not being able to penetrate them, they fly off easily through the Pores; so there may be others fitted for softer Parts, and these cannot infect the denser ones.

But where the Disposition of the Body favours (that is) where there is a Conformity, as to Magnitude, Figure, &c. as well in the Pores of the Skin, as the Particles of the Blood, and the other Parts of the Body, there the Contagion immediately insinuates itself, and produces many like Corpuscles in that Body: And hence the Reason is to be deduc'd,
why

why *v. g.* the Contagion of the Phthific is sooner propagated from Brother to Brother, and from one Relation to another, and from the Lungs to the Lungs, sooner than to one who is no Relation; or, why it does not exert its Power equally on the Skin, or Liver, of another Person, as upon his Lungs; for the Bodies of Relations use to be more like, with Respect to the Pores, and their Particles; and the same Reason holds, with Respect to the similar Parts of different Persons, as of the Lungs of *Peter*, and the Lungs of *Paul*. Whence the Miasmata from a phthifical Body, produce the Phthific; those of a Dysentery, the Dysentery, &c. from their Similitude with the Pores of the Parts.

Observe, That one Body may infect a great many, and yet remain equally infected.

Q. What is a Disease without Contagion?

A. That which is not propagated by Contagion from one Body to another, as a Wound, or Swooning, &c.

* This is metaphorical, and means nothing more than the Lungs of two different Persons, of similar Parts and Constitutions.

C H A P. V.

Of pandemical, epidemical, endemical, and sporadic Diseases.

Q. **W**HAT are common, or pandemical Diseases?

A. They are such, when Diseases of the same Kind, at the same Time, invade several Countries.

Q. What is an epidemical Disease?

A. It proceeds from a common Cause, and invades many Persons in one Place, and at the same Time.

Q. What is an endemical Disease?

A. It is a Disease peculiar to a Country, arising from a common Cause; as the Scurvy in *Holland*; the Rickets in *England*; the Plica in *Poland*.

Q. What are sporadic Diseases?

A. When Diseases of various Kinds, at the same Time, and in the same Country, invade the People, as the Pleurisy, and Ophthalmy, or Inflammation of the Eyes.

That these Things may appear plainer, I say, that some common Distempers are called Pandemial; and they are Distempers of the same Kind which invade many Persons at the same Time, and in the same, or in several Countries

Countries; Of the Pandemial, one is epidemical, the other endemial.

An epidemical, or popular Disease, is a Disease arising from some common Cause, not confin'd to any particular County, but invading many Persons at one Time and Place; as the Plague, Quinsy, and epidemical Pleurisy.

Observe, That it is said to be confin'd to no Country, which is contrary to endemial Diseases.

Observe secondly, I say, from a common Cause, such as the State of the Air, and the Weather, also a bad Diet.

An endemial, or Country Disease, is a Disease arising from some common Cause, and peculiar to some certain Country; as the Scurvy to *Holland*; the Pox to *India*; swollen Throats, or the Bronchocele, to the *Alps*; the Struma, or King's-Evil, to *Spain*. The common Cause here, is the Air, the Situation of the Place, the Water, the Diet that is peculiar to this or that Country.

Sporadic Diseases (which Term signifies scatter'd about, as being rise in many Places) are diseases of various Kinds, that invade many Persons at the same Time, and in the same Country, as the Pleurisy, and Opthalmy; which, altho' they are both Inflammations, are said to be of different Kinds, by Physicians, who take that Difference from the Part affected, and the different Kind of Symptoms.

C H A P. VI.

Of a short, and a long Disease ; of the acute, and not acute ; according to the Time of its Duration, a Disease is termed either long, or short.

Q. **W**HAT is a short Disease, sometimes called Acute ?

A. A short Disease, is one that comes to a Period soon, as the Ephemera, or Fever of one Day ; the burning Fever.

Q. What is a long Disease, sometimes call'd Chronical ?

A. It is one that does not soon come to a Period ; as a Quartan Ague, Dropsy, a Palsy, and an Epilepsy ; that is, speaking, not of the Fit alone, but of the whole Time of the Epilepsy ; from which in this, as in all other Diseases, the Length is taken.

N. B. From the Length of Time, and the Manner of its passing through it, a Disease is also called acute, or not acute.

Q. What is an acute Disease ?

A. It is one that comes to a Period in a short Time, attended with Danger ; therefore it is a Species of short Diseases ; for every
acute

acute disease is short, but not the Contrary; because every short disease is not acute, as the Ephemera, or day Fever, is short, but without danger.

Q. How many Distinctions do you make of acute Diseases?

A. They are distinguished into four Degrees of Acuteness; first, the extreme acute, which ends the third Day, or the fourth, at farthest; as the extreme acute Apoplexy; also the pestilential Fever. Secondly, the very acute, which lasts, at most, seven Days, as the Causus, or burning Fever. Thirdly, the acute only, which lasts twenty Days in its longest Continuance; as the continual Fever, without Burning. Fourthly, the degenerate acute, which, sometimes, continues to the 40th Day; but the two last Species seem improperly call'd Acute, because they are not short Diseases.

Q. What is a Disease, not acute.

A. A Disease not acute, is not attended with Danger; nor does it come to a Period in a short Time: Of this Sort is every Disease of long Duration; and also every one that is not attended with Danger.

C H A P. VII.

Of benign and malignant Diseases.

Q. WHAT is a benign Disease?

A. That Disease is call'd benign, that hath its usual Symptoms, as the tertian, or burning Fever, having their common Symptoms.

Q. What is a malignant Disease?

A. A malignant Disease, is that which hath more dangerous Symptoms than common.

Q. What is the *Mos Morbi*, or Mode of a Disease?

A. The *Mos Morbi*, from which a Disease is said to be *boni aut mali moris*, is a Condition attending a Disease, by Reason of the Symptoms appearing more dangerous, or favourable.

Q. Whence does the *mali moris*, or ill Condition, proceed.

A. A Disease is then said to be *mali moris*, when the peccant Matter hath some unusual Malignity; that is, the Matter is more adust, or more putrefied, &c. But this does not proceed from the Weakness of the Body affected, although from its Weakness, or Disposition, the Symptoms may arise more than commonly dangerous; as we, sometimes, see an ordinary Fever attended with a Syncope, and violent Vomitings;

Vomitings; so that it may be then rather called a great Disease, but so only with Respect to the Patient.

Q. How does a malignant, differ from a contagious Disease?

A. I say, that they mutually differ in themselves; for the Plague is both contagious and malignant; but the malignant may be not contagious: As for Instance, a Tertian having Symptoms more violent than usual, and yet not contagious.

Q. Is not every contagious Disease malignant?

A. By no Means; for a disease may be contagious, and not malignant; as a Species of the Itch.

C H A P. VIII.

Of great and little Diseases.

OBSEERVE, from its Quantity, a disease is called Great, or Little.

Q. May not the Magnitude of a disease be considered two Ways?

A. It may; First, by Comparison with the Patient; and, in this Way, a little disease, in it self, may be called Great: Thus a common Fever, or any other slighter disease, if
it

190 *The Rudiments of Physick.*

it is considered with Regard to an Infant, or a weak Man, is generally reckoned Great. Secondly, it may be called Great, considered in it self.

Q. What is a Disease, in it self Great?

A. A Disease that is properly called Great in it self, is one that is apt to sink the greatest Strength, and occasion Death.

Q. From what Origin is such a disease called Great?

A. This Magnitude proceeds from a double Cause, *viz.* from the great Usefulness of the Part; as suppose the Brain, the Heart, or Stomach, &c. are affected; or that the Disease is extensively, or intensively great; as suppose an Inflammation (which is not necessarily a great Disease) should seize the whole Arm, or Leg; or if there should be an Inflammation only in one Hand, or a Part of it, but so violent, as to threaten a Mortification.

Q. Is a great Disease the same as a violent one?

A. It is not; because the latter, besides its Magnitude, hath also a certain Impetus, and Velocity.

Q. What is a little Disease?

A. A little Disease, is one that is not apt to depress the Spirits, and occasion Death, as the Fever of a Day, the Tenesmus, &c.

C H A P. IX.

Of a primary Disease, i. e. by Idiopathy, and of a secondary Disease, or by Sympathy.

Q. **W**HAT is a primary Disease, or a Disease by Idiopathy?

A. A Disease that is properly primary, or by Idiopathy, is one that has no Dependence on another in the same Body, and therefore requires its own Cure; as the Obstruction of the Kidnies by a Stone.

Q. What is a secondary Disease, or symptomatical?

A. A secondary Disease, by Agreement, or Sympathy of Parts, is a Disease that depends on another in the same Body; and therefore does not require its own Cure; as the Delirium that follows the Inflammation of the Diaphragm; for the Delirium depends upon that Inflammation, and ceases with it, and does not require its own Cure.

Q. What do you understand by Sympathy?

A. Sympathy, or Agreement, by which the Parts are said to suffer by Sympathy, or Agreement, is only a mutual Suffering of the Parts, one affecting the other.

Q. How

192 *The Rudiments of Physick.*

Q. How many Ways may this Agreement be distinguished?

A. Two; first, when a Part is corrupted by a corrupted Part. Secondly, when a Part is affected by its Nerves being wounded: The first is call'd *Affectus ejusdem*; the second, *Affectus diversi*; that is, either a general, or particular Affection of the Parts.

C H A P. X.

Of hereditary Diseases, and of those not hereditary.

Q. **W**HAT is an hereditary Disease?

A. An hereditary Disease, is a Disease communicated from Parents to their Children, through the Fault of the Semen, or the bad Nourishment of the Foetus.

Q. May not a Disease, in some Cases, be hereditary, though the Parents never had it?

A. It is not necessary that the Father and Mother should ever have a Disease they received from their Parents; because they may, by a contrary Method of Living, restrain and prevent an hereditary Disease; but having a Disposition to it from their Progenitors, or from some other Cause, they may communicate it to their Children.

Q. Must

The Rudiments of Physick. 193

Q. Must an hereditary Disease appear at its first Rise?

A. We are not to suppose, that an hereditary Disease must shew itself in an Infant, for sometimes it does not appear till they become of riper Years, because the morbidic Disposition given to the Offspring then only shews itself, either through the Method of Living, or a different Temperament, or from some external Causes: Or, lastly, by Means of another Disposition of the Blood, and solid Parts; for Want of all which Circumstances, the hereditary Taint hitherto lay latent and conceal'd, though not absolutely subdu'd. Thus we often see an hereditary Phthisic does not much affect a Person till the 24th, 30th, or 36th Year; as we also see the Small-Pox, from the remaining Impurity of the maternal Blood, does not appear till the 8th, 10th, or 12th Year, and sometimes longer; and the same Thing happens in other Diseases.

Q. Can you explain to me more fully where this hereditary Seed lies so long conceal'd; how it is excited; what it is in itself; and how it is convey'd to the Foetus?

A. To the first, I answer, that this Seed may be so long conceal'd in the solid Parts of the Body, or in the more solid Part of the Blood, or wound up in, or covered over with the softer Part of it; till at length the Mass of Blood acquiring a greater Effervescence, it is exalted and rarified from the inmost Recesses

194 *The Rudiments of Physick.*

of the Body, in which it was fix'd, and imprison'd, or is wash'd out of the Mass, and taken into it again, or being in it, the Seed, or Taint, is extricated from the Blood by its Dissolution, and Effervescence, and carried to some Part that it can most easily penetrate.

To the Second, I answer, that this Taint is composed of a Corpuscle, or Corpuscles, which are carried from the affected Parts of the Parents, with the Blood, to their Testicles; or, in the Mother, convey'd, by the Blood and Chyle, to the Womb, which Corpuscles contain in themselves, as in a Taint, the whole Essence of the Disease; and, by Reason of its Shape, while in Motion, of the greatest Activity, like a Contagion; from which it only differs, as to its different Time of acting.

To the Third, that this Taint may be convey'd at first, with the Blood, to the Testicles, both of Men and Women, and may easily insinuate itself, through its extreme Fineness and Agility, into the Ova of Women, and into the Seed of Men; and, by this Means, infect the Matter of the Foetus with a Defect that may be reviv'd some Time after. Nor does it signify any Thing that, in treating of the Seed, I said, that the grosser Part of it did not so much conduce to our Formation, as a certain fine, subtle Spirit proceeding from it, that enters the Ovarium; for this Taint, by Reason of its extreme Subtilty, may unite
with

with the seminal Spirit, and so contaminate the Ova, out of which the Fœtus is form'd.

Lastly, it is not doubted, but that an hereditary Taint may be given to the Fœtus with the Aliment, or with the Mother's Blood: For the Chyle, which nourishes the Fœtus, is made in the Mother's Body, and passes thro' it; and the Blood of the Mother gives Growth to the Womb; and, tho' it does not nourish the Fœtus; yet, by its continual Vapours affecting the Cavity of the Womb, and the Placenta, it infects the Blood, and Chyle, of the Fœtus.

Q. What Diseases are most commonly observed to be hereditary, though we cannot positively assert, that any Disease is actually so?

A. Many Diseases are hereditary; but these are the chief; the Gout; the Stone; the Apoplexy; Melancholy; and the Phthific: But it is very doubtful to assert, when we see Persons affected with any of these Diseases, that they certainly derived them from their Parents, because they may arise from their own proper Defects; therefore we only judge by Suspicion, when we pronounce any Person to be affected with an hereditary Disease; because we have heard their Parents were troubled with the same Disease.

Q. What are Diseases not hereditary?

A. They are such as cannot be propagated from Parents to their Children, as a Wound.

C H A P. XI.

*Of the several Stages of a Disease ;
of a Paroxysm, a Period, a Type,
and of a Relapse.*

Q. **W**HAT is the Stage of a Disease ; whence is it taken ; and how many are there ?

A. The Stage of a Disease, is that Portion of Time in which any remarkable Change is observed in Diseases. This Change is reckoned according to the different Activity of the morbid Cause in the Body, and the Contrary, which is further known from the Increase, or Decrease, of the Symptoms.

Q. What is the Time of the entire Disease ; how many distinctions hath it ; and when are they to be reckon'd ?

A. The Time of the entire disease, that distinguishes the whole Course of it, is divided into four Stages, viz. the Beginning, the Encrease, the State, or Height, and the Declination. The universal Beginning of a disease, is when a disease begins to act, and when, as yet, the Actions are not much injur'd. The universal Encrease of a disease, is when a disease injures the Actions, but not in the highest degree. The universal State of the disease, or its highest Acme, or Point,

is when the Disease injures the Actions in the highest Degree. The universal declination of a Disease, is when a Disease no longer injures the Actions.

Q. Is not the Beginning of a Disease differently taken by the Physician, and Vulgar?

A. The common People call the first Hour, or Day, in which they feel the Disease, the Beginning; but we make the Beginning contain several Days; but this only in Diseases of a longer Duration.

Q. Hath not every Disease its four universal Times, or Stages?

A. These four are always reckoned in a Disease, whether it tends to Life, or Death; whether it is oppos'd by Medicines, or not; but these Stages are often very unequal; because one entire Disease finishes its Course, and, consequently, its universal Stages, sooner than another, especially according to the good, or bad Method of their Cure.

But, vulgarly speaking, about the Stage of a Disease; that is, by measuring it according to the usual Duration of this, or that Disease, we may say, that these four Times, or Stages, are not found in every Disease; but that some are cured in the Beginning, in the Increase, or in the critical State of the Disease; others receive their Cure from Medicines in the Beginning, or Increase of the Disease.

Q. Do any die in the general Declination of a Disease?

A. None

198 *The Rudiments of Physick.*

A. None die in the Declination of a Disease; at least, not of the Disease, that is in the Declination; but they may die of some other Disease complicated with it, or supervening, or for Want of the necessary Powers of Life, as in old Age.

Q. What is the particular Stage of a Disease?

A. It is the particular Time of a Disease, that the Paroxysm lasts.

Q. What do you mean by Paroxysm?

A. A Paroxysm is the Time that the Disease is heightened, in Diseases that invade by Fits. So the Paroxysm of the tertian Fever, is that Space of every third Day, in which the Fever grows stronger: And it has its Beginning, Increase, State, and Declination, according to the Degree of the Fever's Violence.

Q. What is the Period of a Disease?

A. The Period, is the Time of the Augmentation, and Remission in Diseases, that invade by Fits; or the Time from the Beginning of one Paroxysm, to the Beginning of the next. Whence the Paroxysm differs from the Period; because the Paroxysm is only Part of the Period, or a particular Time comprehended in it. Those Diseases are said, by Physicians, to keep their Period, which return at stated Times, as the quotidian, tertian, and quartan Fever; thus we say, a Disease keeps a tertian Period, or a quartan Period, &c.

Q. What

Q. What is the Type of a Disease?

A. The Type, is the Order of encreasing, and remitting in a Disease, the Form, or Manner of the Period.

The Consumption, and Palsy, have no Period, or Type, for they afflict continually.

Q. What is a relapsed Disease, and why must it return in a short Time?

A. It is a Disease returning in a short Time after it was cured: I say, in a short Time, because, if a long Time after the Cure of any Disease, a Person is attack'd with the like Disease, we do not reckon it the same, but a different one; and therefore cannot be called a Relapse.

C H A P. XII.

Of the Cause of a Disease, and its several Kinds.

Q. **W**HAT is the Cause of a Disease?

A. The Cause of a Disease, amongst Physicians, is something præternatural affecting the Body.

Q. How many Causes are there?

A. There are many; but they are ranged under three general Heads by Physicians, viz.
1. The Procatartic. 2. The Antecedent, and the Consequent, or containing Cause.

Q. What

200 *The Rudiments of Physick.*

Q. What is the procatarctic Cause?

A. The procatarctic Cause is evident to all Persons; that is the Cause to which any Person, of an ordinary Capacity, may impute the Disease, which is either internal, or external.

The internal procatarctic Causes are, all the Affections of the Mind, as Anger, Grief, &c. Thus the Vulgar use to impute the Death, or Sicknes, of any Person, to his Excess of Joy, or Anger, if they are seized soon after it.

The external procatarctic Causes are, a Sword, a Stone, a Knife, a Stick, the Air, Diet, &c. from which the Body receives some Injury.

Q. What is the antecedent Cause, and why is it said not to be evident to every one?

A. The antecedent Cause, is the Cause not evident to every Person, and which, being moved, does not presently take away the Disease. Such is the Abundance of the Blood, of an Inflammation, which it hath caused in any Part; for the Quantity being lessened by Vænesection, the Inflammation does not immediately cease; for the Extravasation of the Blood may still continue in the Part, and remains the containing Cause.

Such is the Load of Phlegm in the Stomach (that is, in a different Respect) the Cause of the Apoplexy, which it produces of itself, by sending some Parts into the Blood,
and

and the Head, for that being remov'd from the Stomach by a Vomit, that Part of the Phlegm may remain, that obstructs the Passages of the Brain.

N. B. Therefore the antecedent Cause is the same as the Cause which favoured the containing Cause.

Q. What is the containing Cause?

A. The containing Cause, is that which being taken away, the Disease immediately ceases: Such is the extravasated Blood in an inflam'd Part, of the Inflammation that it caused there.

Q. Can the containing Cause be also the procatarctic, or the antecedent Cause?

A. This may be also the procatarctic Cause; thus a Thread binding an Artery, or a Bit of Bread too hastily swallowed, sticking in the Gullet, is the Cause of an organic Disease, by altering its Figure and Dimensions *ex vitiata figura*, for these Parts require Cavity; but this is evident to every Person.

But the containing Cause cannot be the antecedent at the same Time, and of the same Disease; because the same Cause ought to be such as the direct Cause itself: Here the Disease would be supposed to exist, and removed immediately by the same Cause; and this cannot happen together; but the Cause which is now antecedent, may become the containing, and e contra. So some Part of the Blood causing an Inflammation of the Hand, by its

Redundance, is the antecedent Cause of this Inflammation: But if it only circulates with the rest of the Blood through the Limbs, the Head, and other Parts, it will be the containing Cause; if it flows to the inflam'd Hand, and is there again extravasated, it will become the antecedent again, if from the affected Hand it passes into the Veins, and encreasing the Mass of Blood, circulates with it as before.

Q. Is there not a clearer and easier Division of the Cause of a Disease?

A. The Cause of a Disease is sufficiently, and far more clearly divided into the external, or outward Cause, and the internal, or inward Cause; also into the immediate Cause, and the remote. *Vid. Sennert.*

C H A P. XIII.

Of a Plethora, Cacoehymia, and Flatulence.

Q. **W**HAT is a præternatural Humour?

A. I deferred treating of a Humour in Physiology, because that considers only natural Things; but this Part treats of Things contrary to Nature, and therefore of a Humour, as the frequent Cause of a Disease.
Therefore

Therefore a præternatural Humour, is one that hath some Quality hurtful to us.

Q. Of how many Kinds is this Humour?

A. As many as there are natural Humours.

Q. What is a Plethora?

A. A Plethora, or too great Plenitude, is a too great Quantity of the Mass of Blood, with a due Proportion of Humours in it.

Q. Is a Plethora properly divided into a Plethora of the Vessels, or in Respect to its Force, *ad Vasa ad Vires*?

A. That Division is not good; yet it is called a Plethora *ad Vasa*, in which the Vessels are much distended; and a Plethora *ad Vires*, where the Strength is much impaired.

Q. By what Means does a too great Quantity of Blood impair the Strength?

A. This happens, if there is a very great Quantity of Blood; for then the Blood is more solid, and passes more slowly thro' the Heart, whence it does not receive so great an Effervescence in the Heart. Besides, it also much weakens the Heart, by too great an Expansion of its Fibres, and makes it weary, from whence the Blood hath a weak Propulsion, an insufficient Generation of Spirits, or Thickness, and thence arises a Sluggishness of all the Actions.

The foregoing Division of a Plethora does not hold altogether good, as every Plethora *ad Vasa*, is also a Plethora *ad Vires*, for the Vessels cannot be too much distended, but there must

204 *The Rudiments of Physick.*

must be a Loss of Strength from too great a Quantity of Blood of the Heart, to the Capacity of which they are proportioned; and thus the Strength is impaired, and e contra, the Quantity of Blood never impairs the Strength, but when it is too great, and then it distends the Vessels too much, and is a *Plethora ad Vasa*.

Q. What is a Cacochymia?

A. A Cacochymia is a depraved Quality of the Blood.

Q. Whence does it proceed?

A. Not only from the bad Quality of some Humour in the Blood, but also from the depraved Quality of any Humour, distinct from the Blood; for then the whole Mass is not reckoned to have its necessary Quality, or Temper, and so a Cacochimia is of many Kinds, as the several Humours, distinct from the Blood, may be injurious by their Quantity, or as they all, even the Blood itself, may be depraved in Quality.

Q. What is a Flatulence; of what Matter is it generated; how does it end, and where is it chiefly formed?

A. A Flatus is reckon'd a præternatural Humour, which proceeds from the Humours chiefly from the Meats taken in the Phlegm of the Bowels, which, whilst it ferments with the Gall, and the pancreatic Juice (as in the Fermentation of other Liquors) is resolved into thick, tenacious Vapours, that are agitated
like

like rarefied Air, and expand the Parts containing them, till they subside, or are dispersed, or otherwise discharged. Their principal Seat is the Intestines, because they contain the fittest Matter, and Cause of it, and because they are seldom without a Flatulence.

C H A P. XIV.

Of a Symptom.

2. **W**HAT is a Symptom?

A. A Symptom is the Effect of a Disease, as Thirst, of a Fever.

2. Must a true Symptom follow a Disease, as its Cause?

A. A Symptom may also follow another Symptom; it may also follow the Cause of a Disease; but this is not a true Symptom; the Disease itself may be a Symptom; it may be also the Cause of a Disease, and a Symptom. Every Disease hath its Symptom.

2. What are the Differences of Symptoms, and whence are they taken?

A. A true Symptom ought to follow a Disease as its Cause, and that immediately, or remotely only: From whence there is a Symptom immediately following a Disease, as above-mentioned, and another that does not immediately follow it; *i. e.* a Symptom, of a Symptom,

206 *The Rudiments of Physick.*

Symptom, or one following the immediate Symptom. The Imagination deprav'd, as it follows the Motion of the Spirits in the Brain in a Circle, and increased further by an organic Disease, or by the too great Stricture of the optic Nerves, so that, through this Stricture, the Spirits rebounding from them are confined and obstructed. A Symptom may also follow the Cause of the Disease; but, in Reality, it is only an Effect of the Disease. Thus, upon the Application of something very corrosive to the Flesh, it causes Pain, and Itching, and sometimes an Ulcer; which, from the latter, may be called a Symptom of the Cause; hence that is the Effect which is effected by the Cause: Joint Effects are Effects from the same Cause. That I may, at last, answer the Distinction proposed, I say, a Symptom is divided into three general Kinds, or Species, *viz.* into an Action injur'd; the Defect of the Retentions and Excretions; and the Quality of the Body alter'd.

C H A P. XV.

Of an Action injur'd.

2. **W**HAT is an Action injur'd?

A. An Action is said to be injur'd, when it is not perform'd in a proper Manner.

2. How

Q. How many Ways may an Action be said to be injur'd?

A. Every Action may be said to be injur'd three Ways; as entirely destroy'd, diminish'd, or deprav'd.

Q. What is an Action entirely destroy'd?

A. We say an Action is entirely destroy'd, as the Sight in Blindness, Motion in an Apoplexy, &c.

Q. What is an Action diminish'd?

Q. Which is less, and perform'd in a weaker, and lesser Degree than it ought, as the Appetite is lessen'd in a sick Person?

Q. How do you explain an Action deprav'd?

A. An Action deprav'd, is that which hath some special Defect, whether it is weaken'd, or not.

Q. Under what Head do you place an Action encreas'd, and Pain?

A. They come under the Article of an Action deprav'd.

Q. What is Pain?

A. Pain is an uneasy Sensation, arising from something painfully affecting the Parts.

C H A P. XVI.

Of the Defects of Excretions and Retentions.

Q. **W**HEN are the Excretions and Retentions vitiated?

A. When there is something vitiated in the Excretions and Retentions arising from the Disease.

Q. What is meant by an Excretion here, and how is it vitiated?

A. By an Excretion here, is meant whatever passes out of the Body: That is, not only what is continually separated from the Chyle, and Blood, in sound Persons, but every Thing that is evacuated by the Sick, and that is faulty in its whole Substance, or Quantity, or Quality, or in the Manner, or the Time of Excretion.

Q. How many are the Faults of the Excretions and Retentions? What is faulty in its whole Substance? And can you give me Examples of all the Defects in the Excretions?

A. They are five: 1. In its whole Substance. 2. In Quantity. 3. In Quality. 4. In the Manner of Excretion. 5. In the Time of Excretion. That Excretion is said to be faulty in its whole Substance, which in its Substance, or whole Species, is præternatural; and that
single,

single, as the Stone, a Worm in the Bowels, the Procidentia Ani, or falling down of the Anus, in a Dysentery. And, consequently, the Schools are wrong, when they say, that every Thing which is retained in the Body, ought to be excreted, as faulty in its Substance; for laudable Blood is not so, but the præternatural Excretion of it is faulty and symptomatical. Yet, speaking further of the Diseases of the Solution of Continuity in the Vessels, this Blood is, by me, comprehended under an Excretion, but not as having any Defect in its Substance, but in the Quantity, Quality, or in the Manner, and Time of the Excretion.

As to the Examples: The Examples of all the Faults in the Excretions are these: First, in Excretions entirely præternatural, they are a Stone, a Worm, a Caruncle of the Intestines. 2. In Quantity; as too great, or small a Quantity of the Menfes, or hemorrhoidal Blood; a too great Excretion of the Seed in a Gonorrhœa, of Urine in the Diabetes. 3. In Quality; as too strong a Smell, or unusual Colour in the Sweat, or Urine. 4. In the Manner of the Excretion, as the Excretion of the Fæces, through the Mouth in the iliac Passion; the Excretion of the Menfes by the Lungs, or by the Mouth. 5. And lastly, In the Time, as when the Excretion of the Menfes is sooner, or later, &c. all which fol-

low the Action injur'd, as will appear upon Examination.

2. What is understood by a symptomatical, and what by a natural Excretion, or by Idiopathy?

A. A symptomatical Excretion, is that which is made by a Disease, or while the Cause of a Disease so irritates, as Sweat, a Flux of the Belly, or Vomiting, &c. (the Cause still continuing in the Body) without any Relief to the Patient, and sometimes with greater Injury: This Excretion is præternatural and faulty; but that Excretion is natural, or idiopathic, which happens from this Reason; because the morbid Cause is so subdued, and prepared in the Course of the Disease, that it may be expelled by any Passage, with Relief to the Patient. An Excretion entirely præternatural, is the Excretion of a Stone, as before-mentioned.





THE
Fourth, or Semeiotical Part,
OF THE
RUDIMENTS of PHYSICK.

CHAP. I.

*Of a medical Sign in general; and
of some of its Species.*

First Question.



WHAT is called a Sign, among
Physicians?

A. A Sign, among Physicians,
is that which more plainly leads
us to the Knowledge of something
occult in the Art of Physick.

Q. What do you understand by occult, in
this Definition?

A. I un-

212 *The Rudiments of Physick.*

A. I understand, by Occult, the Constitution of this, or that Person.

Q. How is a Sign divided?

A. Many Physicians give the Divisions of Signs, and Subdivisions, &c. They also question whether there are not neutral Signs; I call them only Signs which are of greater Consequence, and necessary in daily Practice; therefore I divide them into Diagnostic, and Prognostic.

Q. What is a Diagnostic Sign?

A. A diagnostic Sign, is that which shews something present; a prognostic Sign, foretells something that is to come: As to Signs commemorative, salubrious, insalubrious, separable, and inseparable, proper, natural, and præternatural, Vid. *Sennart.*

N O T E,

A prudent Physician will take Care not to proceed too freely, or rashly, upon prognostic Signs, for Fear it should procure him Hate, or Disgrace; but it is rather better to conceal his Prognostication under the Name of Danger.

C H A P. II.

*Of the Knowledge of a Disease
from four Signs.*

2. **B**Y what Signs is a Disease known?
A. 1. By the Species of the Excretions; as the Stone, by the Gravel in the Urine. 2. From the Nature of the Part; as by Pains of the Belly in Worms. 3. From the Property of the Pain; as an Inflammation from a throbbing Pain. 4. From Accidents peculiar to it; as a burning Fever, from the intense Heat of the whole Body, with a Blackness of the Tongue, and an inextinguishable Thirst. Moreover Things helping, or injuring, afford a certain Knowledge of Disease.

C H A P. III.

*Of the Knowledge of the Cause of
a Disease.*

2. **B**Y what Signs do we attain the Knowledge of the Cause of a Disease?

A. 1. From the Temperament; from a hot Temperament, we know the Disease is hot.

2. From

214 *The Rudiments of Physick.*

2. From the Colour of the Skin ; from a yellow Colour, we know it is the Gall, and from thence termed Bilious. 3. From the Age ; in an aged Person, the Cause is cold ; in Youth, hot. 4. From the Kind of Pain ; from a burning Pain, we know it is the Gall ; from a wandering Pain, it is a Flatus. 5. From the evident Cause ; so from a luxurious and plentiful Diet, join'd to a sedentary Life, we know that too much Blood is the Cause. 6. From the Excretions ; so from a frequent Excretion of Phlegm, we know that to be the Cause. From Things helping and injuring. Thus, if a cold Medicine gives Relief, we know the Cause is hot, and the like in other Cases.

C H A P. IV.

Of the Knowledge of the Part affected.

Q. **B**Y what Signs do we know the Part affected ? And give me Examples of these Signs ?

A. 1. From an Action impaired ; we know the Ear is affected, if the Hearing is impaired. 2. From the Situation of the Disease ; the Spleen is affected from a hard Tumor in the
Left.

Left-Side. 3. From the Nature of the Pain; thus a Membrane is known to be affected from a pricking Pain. 4. From its own Accidents; from Anxiety, the Stomach is known to be affected; from a Syncope, the Heart. 5. From the Excretions; an Affection of the Lungs, from the Particles of spungy Flesh excreted with a Cough; by the Fæces coming through a Wound of the Belly, we know the Intestines are injured.

C H A P. V.

2. **F**ROM what Signs do we acquire a Knowledge of the Symptoms?

A. A Wasting, or pining away, from the diminished Nutrition; Sanguification injured, from the bad Complexion. So a weak Constriction of the Heart is known, from the Weakness of the Pulse.

2. From what Signs do we foresee, whether a Disease will terminate in Life, or Death?

A. Chiefly from four. 1. From the Species of the Disease; as a Phthisic, a Wound of the Heart, the Plague, a Cancer. 2. From the Magnitude of the Disease, compared with the Strength of the Patient: As a Disease being great in itself, or comparatively so, or that is likely to last long, especially if it is also great, for such a Disease is mortal. 3. From the
the

216 *The Rudiments of Physick.*

the Continuance ; if a Disease is long, altho' it is not very dangerous, and great, it is generally mortal, destroying the Strength by slow Degrees. 4. A Disease that, from its Nature, is known to be mortal, is one that hath the worst, and most violent Symptoms.

N O T E,

The Contrary tend to Health. 1. As the one Day Fever. 2. A Disease without Malignity.

The Season of the Year is also to be considered : Thus, in Autumn and Winter, Diseases are generally longer ; shorter in Spring and Summer, through the Tenuity of the Matter, and the greater Openness of the Pores.

C H A P. VI.

Of a Crisis, critical Days, and their Signs.

2. **W**HAT is a Crisis ?

A. A Crisis, is a sudden Alteration for Life, or Death.

2. How is a Crisis divided ?

A. Into good, and bad ; perfect, or imperfect ; we sometimes see Fevers suddenly cur'd,
by

by Sweating; or a Flux of the Belly, or a Bleeding at the Nose.

Q. What is the Cause of a Crisis?

A. The Cause of a Crisis, is a more vehement Influx of the animal Spirits, by Irritation, into the Fibres of some Part.

There are also critical Days, as well as climacterical Years* for the Rich and Covetous; and bissextile Years for breeding Women; but these are meer Fables; for we are not to attribute more to these Days, than to others. Vid. *Hippocrat. Aphorism.*

* This means no more, than that the Avaritious are frequently put in Mind of Mortality, from an Apprehension, that their Bodies receive great Alterations at such Periods of Time; and this Opinion has great Antiquity on its Side, it being supposed the *Chaldeans* received it from *Pythagoras*, whose Philosophy much turned on Numbers, and who attributed an extraordinary Virtue to the Number 7. *Aulus Gellius.*

C H A P. VII.

Of the Pulse, considered as a Sign.

IN Physiologie, I described the Pulse among the Actions; here I only consider it as a Sign: I shall therefore give several Differences, or Species of it, according to which the Physician may form various Judgments: But I would have you take particular Notice, that the Pulse is very fallacious, and suddenly changes with the Motions of the Body, and Mind: Therefore the Physician would do wrong, to

218 *The Rudiments of Physick.*

feel the Pulse immediately upon the Sight of a sick Person, as the great Solitude of the Patient, how he may appear to the Physician, often changes the Pulse.

Q. How many Differences are there in the Pulse?

A. There are many; but the Knowledge of four is sufficient for a Physician: For the Pulse is

Great, or small;
Strong, or weak;
Equal, or unequal;
Quick, or slow.

The Pulse is great, when every Artery beats hard, both in Length, Breadth, and Depth.

The Pulse is strong, in which the Artery strongly strikes, the Finger feeling it.

The Pulse is equal, in which every Pulse strikes the Finger equally.

The Pulse is quick, that beats oftner than usual in the same Space of Time.

N O T E,

From contrary Causes, proceed contrary Pulses: Such are,

1. The small Pulse;
2. The weak;
3. The unequal.
4. The slow Pulse.

C H A P.

C H A P. VIII.

*Of the Pulse peculiar to different
Temperaments, Ages, Sexes, &c.*

HERE it is necessary to know the natural Constitution of every Body; and then it will be easy to determine the Difference of Pulses.

1. What Pulse belongs properly to the hot Temperament; what to the cold, the moist, the dry, the hot and dry, and the cold and moist, &c.

2. What the Pulse is commonly in Children, in young Persons, in the Adult, and in old Age.

3. What the Pulse is in Spring.

4. What the Pulse is in Summer, Autumn, and Winter.

5. What it is in Sleep.

6. In Anger.

7. In Sorrow.

8. In Joy.

9. Lastly, what it is in Lovers, whose Spirits move irregularly, being agitated alternately with Fear, Hope, Joy, and Sorrow, which render the Pulse unequal, and irregular. Every Author explains these Things in a different Manner; but by reading some of them, and making Observations on the dif-

ferent Constitutions, every one will be able to form to himself rational Notions: Wherefore, as I study Brevity, I shall say no more on this Subject.

C H A P. IX.

Of the Urine, consider'd as a Sign.

2. **W**HAT is requir'd for the better Inspection of the Urine?

A. I treat here of the Urine, merely, so far as it is an Effect, which may shew us its Cause in some Part of the Body; being thus taken, it shews us either the Temper of the Body, or something peculiar relating to its Parts, through all which the Serum continually flows; as it is from the Condition of the Parts that it is varied in its Substance, and Quality; by which Variation it makes some Discovery. But, that we may rightly judge by the Inspection of the Urine, it must be excreted when the Chylification is quite perfected, whether it be by Day, or Night.

2. How is the Urine of a Beast distinguished from human Urine?

A. If any one, for the Sake of deceiving the Physician, should offer him the Urine of a Beast; it could not be distinguished any Way more certainly, than by the Smell.

2. Can

Q. Can the Disease of any Part be discovered by the Urine?

A. Every Disease cannot be known by the Urine (contrary to what certain Quacks would impose upon the World) for there are several which do not affect the Urine; as the Vertigo, a Wound of a certain Part, the Palsy, or a Limb being out of Joint, and many others; although, in the mean Time, something may be carried from each Part, with the circulating Blood, to the Kidnies, and thence to the Bladder.

Q. What are chiefly the Observations made from the Urine?

A. The Urine chiefly discovers the good, or bad Conformation of those Parts, from which it hath its Perfection, and Generation. Hence the Urine is the diagnostic Sign of Life, and Death, as we shall see in the next Chapter, when I treat of the various Colours of the Urine.

Q. Doth not the Urine signify much in Respect of various Things?

A. The Urine hath various Significations, on the Account of its Colour, Smell, Taste, Quantity, Consistence, Contents, and other Things remarkable in it.

C H A P. X.

Of the Colour of the Urine.

2. **W**HAT Colours are chiefly observed in the Urine?

A. Chiefly four; White, Yellow, Red and Black.

2. What are the general Causes of the Colours in Urine?

A. The general Causes of the Colours in Urine, are, the natural Heat rightly concocting, and acting, as well on the Aliments in the Stomach and Bowels, as on the Chyle mix'd with the Blood, and the nutritious Juice, and other Juices mix'd with it; or from the Defect of both, the last is added, as it may be the Cause of limpid Urine; the watery Colour is not given it, because Water has no Colour, therefore there can be but two general Causes of the Colours in Urine.

2. How is it proved, that Heat is a Cause of the Colour in Urine?

A. That Heat is a Cause of the Colour in Urine, appears plain enough; for we see that in Fevers, after being heated by a warm Air, after Labour, after long Watching, where the Heat is encreas'd, after long Fasting, a longer Retention in the Body, or Excretion after Eating, the Urine is higher colour'd.

If

If it be objected, that the Urine, in these Cases, is more colour'd, not only by Reason of the Heat acting immediately upon it, but so far as that Heat generates Gall, which tinges the Urine by being mix'd with it; I answer, it is true, that more Gall is then generated, which is mix'd with the Urine, and helps to colour it; but I do not admit that it acquires all its Redness from the Gall alone, as the Heat acts with equal Force, and at the same Time both upon the watery Part of the Urine, and on the Particles, which may be derived from the Gall. For we see that Beer grows deeper colour'd by Boiling; that Rhenish Wine, carried into *Spain*, grows yellower; and that Urine, boil'd on the Fire, grows much redder: But, whilst I speak here of Urine, I understand it not as a simple Body, but as mingled with the Gall (which is naturally excreted with it, through the Kidnies) and other Parts, and so this Objection is of no Force; for it will always hold true, that the Urine, as I have considered it, will take a Tincture from the inward Heat.

Q. How many Sorts are there of white Urine?

A. Two; one thin and limpid, like Water; the other thicker, like Milk, or Whey; which last, in Children, is commonly a Sign of Worms in the Bowels.

Q. What is the Cause of these Kinds of Urine, and what do they imply?

A. The

224 *The Rudiments of Physick.*

A. The Cause of limpid Urine is, First, a weak natural Heat, too much Drink. Secondly, too short a Stay in the Body, through too great Laxity of the Parts; for thus, the due Chylification, or Sanguification, is not perform'd, so that little or no Tincture can be given to the Urine; an Obstruction of the Passages, as in the Stone in the Kidnies; and, Lastly, the Bile affecting the Head, from its too great Rarefaction, as sometimes suddenly happens in Fevers, and which always forebodes a Delirium. The milky Urine, is caused by the Mixture of some whitish Humour, as Phlegm, Chyle, Seed, or Pus. (I once saw a certain Divine, who daily discharged two Thirds, or Half his Urine, chylous; and Sir *Richard Blackmore* was a Witness of the same Case.) Of these Colours, see *Fernel* and *Willis*. ☉

2. What is the Cause of yellow Urine, and of other Kinds reducible to this Class?

A. Yellow Urine is caused by the Heat with which the Chyle (being mix'd with the Blood) is duly concocted.

Under this Colour are comprehended, the light and deep Straw Colour, and the Citrine, or Amber Colour; for such is the Urine of sound Persons, and this may be considered as a Standard, and is called the natural Urine of a healthy Person.

If the Degree of Heat is more intense, then it tinges a Linnen Cloth of a yellow Colour,
which

which is a certain Sign of the Yellow Jaundice. Red Urine is caused by a Mixture of Blood, or a greater Degree of Coction: The Blood is mix'd with the Urine, either thro' its Thinness, passing the Kidnies with the Serum, or by a Rupture of a Vessel in the Kidnies, Bladder, &c. Black Urine, and the several Kinds of it, proceed from the very great Aduſtion and Corruption of the Humours in the Body, and are mortal, unless they are voided upon a Crisis; and especially that Kind which is of a dark blue Colour; but the greenish Urine is not so dangerous, for that may arise from a light Mixture of the green Gall, such as is often found in, and thrown up by the Stomach.

N. B. Urine exposed to the Air, changes Colour.

C H A P. XI.

Of the Smell, and Taste, of the Urine.

2. **W**HAT is the natural Smell of Urine; and what does it denote, if it has no Smell?

A. The natural Smell of Urine, is strong, sulphureous, and offensive; and if the Urine

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has

226 *The Rudiments of Physick.*

has no Smell, it imports too short a Stay in the Body.

Q. What do you infer from the urine that is extremely offensive?

A. The urine unusually offensive to the Smell, denotes Corruption, or Ulceration, unless it is caused by eating rotten Cheese, Garlick, &c. But observe, that Pus being mix'd with urine, does not always occasion a Fætor, or ill Smell.

Q. What is the natural Taste of urine?

A. The natural Taste of urine, is salt, and nitrous; if it hath any other Taste, it proceeds from the Mixture of some other Humour.

Q. Is it not convenient for the Patient, or the Attendant, to try the Taste of the urine?

A. It is beneath a Physician to taste the urine; but this may be done by the Patient, or the Attendant, or a Servant, who may acquaint the Physician with the Taste of it, that he may better know the Cause of the Disease; but if this cannot be done, it is best to take no Notice of it.

C H A P.

C H A P. XII.

Of the Quantity of the Urine.

Q. **W**HAT do you understand by the Quantity of the urine?

A. The Quantity, is its being more, or less, than usual.

Q. How much urine is required in a natural State?

A. It should be in Proportion to what we drink, or about a third Part less, that some Part may be allowed for Nourishment, some may, perhaps, pass off by Sweat, or insensible Perspiration, and by Spitting; and some Part ought to remain in the Blood, to dilute it, and forward its Circulation,

Q. What do you judge from a greater, or less, Quantity of urine?

A. A greater Quantity of urine, unless it happens through the Coldness of the Air, hindering Perspiration, or upon taking some Diuretics, or from some other outward Cause; or after some Suppression, a Dropsy, Rheumatism, or the Crisis of a Fever, by which the Cause of the Disease is often carried off; I say, a greater Quantity of urine, without these Circumstances, denotes the Cause to be a Weakness, and too great Laxity of the urinary Passages, and that the Effect will be a

228 *The Rudiments of Physick.*

Wasting, or Contabescence, as in a Diabetes; a smaller Quantity of urine, unless it proceeds from Want of Drinking, denotes a great Heat, evaporating the Serum, by the Breath, Sweat, or insensible Perspiration, as we often find in Fevers; or else an Obstruction of the urinary Passages, and there is Reason to apprehend the Consequence will be either a Dropsy, Rheumatism, Catarrhs, or Anxieties, or some other Disorders, according to the Part it happens to fall on.

C H A P. XIII.

Of the Consistence of the Urine.

2. **W**HAT is the natural Consistence of the urine?

A. The natural Consistence of the urine, is like that of Beer moderately boil'd and fermented, or of any other Lixivium, moderately boil'd: The several Kinds of morbid urine, hereafter mentioned, differ from this natural State.

2. How many Sorts are there of this morbid urine?

A. Four; the first is thick, for Want of Serum, or by the Mixture of some gross Particles, such as we see in the Beginning of Fevers: The second is turbid, or foul, which differs

differs from the thick Sort, because the latter is clearer : The liquified Glue of Fish, and the White of an Egg, dissolv'd, are thick, but, withal, clear, like the urine that is called Turbid.

Q. What is the Cause of thin urine ?

A. The third, is thin urine, which happens from an Obstruction of the urinary Passages ; and thus the urine is often thin from a Stone in the Kidnies, as I have often experienc'd in a great Number of my Patients, who were afflicted with this Disease ; or else from a weak natural Heat, which does not sufficiently elaborate the Chyle.

Q. How is Transparency caused in the urine ?

A. The fourth, is transparent urine, when the Interstices, between the serous Particles of the urine, are less filled with certain grosser Particles, and it becomes clear, and limpid, so that it can more directly, and freely, transmit the Rays of Light.

Q. What is the Cause of troubled, or unconcocted urine ?

A. Troubled, or unconcocted urine, hath a Cause contrary to the foregoing.

C H A P. XIV.

Of the Contents of the Urine.

Q. **W**HAT do you mean, by the Contents of the urine?

A. The Contents of the urine, is any Sort of Matter observable in the Substance of the urine.

Q. How many Kinds are there?

A. Two, viz. The general, and particular,

Q. What is the general Contents?

A. That which is in almost all urine, and is distinguished into three Parts; the Hypostasis, or Sediment; the Eneorema; and the Nubecula.

Q. What is the Hypostasis?

A. The Hypostasis, is what sinks to the Bottom, or the Sediment.

Q. What is the Eneorema?

A. The Eneorema, is what hangs in the Middle-Part.

Q. What is the Nubecula?

A. A little Cloud that appears at Top.

Observe, that of these, the Hypostasis alone should appear in the urine of sound Persons, which always shews the Concoction is still carried on; and that which is white, and the Surface smooth, and of equal Consistence, is found, by Experience, to be the best.

Q. Of

Q. Of what, and how is the Hypostasis form'd in the urine, and the other Contents, and what do they denote?

A. The Hypostasis in the urine, and the other general Contents, are a great Number of very minute Filaments, or certain oblong, and round Particles, that are formed from the Chyle, and from the Juice, into which our Blood is changed, before it yields Nourishment to the Body, which the Serum of the Blood washes off in its Transcolation through all Parts; and which, being separated in the urine, by a Spirit, and the subtile Matter, lays hold of each other, by their rough and ramous Particles, and being entangled together, according to their own Gravity, and that of the Part which they constitute, they either form the Nubecula, Eneorema, or Hypostasis; to which also the greater, or lesser Thickness of the urine greatly conduces: For which, observe, that the Blood, or any Humour, before it is converted into Nourishment, is changed into a gelatinous Humour, not unlike the White of an Egg, and is afterwards turned into Filaments, that are easily intermixed with the Parts, by Reason of their Ramosity: And that the Blood contains such fibrous Particles, appears plainly, by diluting it in Water; for you will soon perceive some very fine Filaments, or Threads, swimming in it; nor are these fibrous Particles destitute of Chyle, but those are destitute of Chyle, that
curdle,

232 *The Rudiments of Physick.*

curdle, like Milk; and, consequently, from the general Contents of the urine, we cannot truly tell, whether the last Concoction is rightly, or not rightly performed; but only that which is performed in the Stomach and Intestines.

Secondly, the Nubecula, and Eneorema, are formed from this Cause, that the nutritious Juice is not enough concocted, nor elaborated into Filaments of sufficient Strength and Thickness, but into lighter and more spongy Parts, that are sustained by the rest; or contains other fibrous Particles in its Pores, which makes it denser, and grosser, and hinders its being divided, to form an Hypostasis.

Q. What doth the red Sediment denote?

A. It denotes, that the Nutriment of the Body is over-much, or too quickly concocted.

Q. What doth a corrupt, or unequal Sediment, denote?

A. Such a Sediment, shews that the nutritious Juice is not equally concocted, or is not of a similar Substance, and therefore not equally complicated in itself.

N. B. If a Sediment appears in Fevers about the fifth, sixth, or seventh Day, it is a certain Sign of Health, if there was none before, and the Sediment is not scatter'd, but even.

Also, in Fevers, the Eneorema, and Nubecula, about the third Day, indicate a Cure; which is more confirmed, if it thickens by Degrees;

Degrees, and something resembles a Sediment; for they are the Fore-runners of a Sediment.

Q. Does the Sediment of sick Persons differ according to their Age, as I mentioned before?

A. It differs very much; for oftentimes it hath some Mixture of morbid Matter, as Pus, Blood, Gravel, &c. but if it is entirely excrementitious, it is commonly white, reddish, or yellow.

Q. What do you understand by particular Contents of the Urine; how many Kinds are there; and of what are they formed?

A. They are very numerous; the principal are the Stone, Gravel, Pus, Blood, Caruncles, Fat, a mealy, and branny Sediment, the greatest Part of which commonly denote a Disposition to the Stone in the Kidnies, and Bladder; but Fatness indicates a Wasting of the Body, and floats upon the Urine of consumptive People. As for Gravel, it is not always the Fragments of a larger Stone, but a saline Concretion in the Urine.



T H E
Fifth, or Therapeutic Part,
O F T H E
RUDIMENTS of PHYSICK.

C H A P. I.

*Of the Indication ; and of the
Indicate.*

Question.



H A T is an Indication ?

A. That a Physician may act rationally, and make a perfect and entire Cure, he ought to have a certain Indication which may guide him to what is, or is not proper to be done ; an Indication is therefore an Insinuation of the Thing that is to be done. N. B. To consider the Thing assisting, and the Thing that is to be assisted.

Q. How do you divide the Indication ?

A. Into

A. Into the Conservatory,* the Preservatory, and Curative.

Q. What is the conservatory Indication?

A. It is an Insinuation of the Conservation, of that which is in the Body, according to Nature: This is done by Things of the same Nature.

Q. What is the preservatory Indication?

A. It is an Insinuation of Preservation from that which may be in the Body contrary to Nature.

Q. What is the Curative Indication?

A. The Curative Indication, is an Insinuation of taking away that which is in the Body contrary to Nature. This, like the former, is done by Contraries.

Q. What is the Indicant?

A. The Indicant, is an Agent remaining in the living Body, which, on our knowing it, points out some Remedy.

Q. What is the Indicate?

A. It is that Relief, that is indicated by the Indicant.

A. How is the Indicate divided?

A. Into the Remedy, and the right Use of it. The Remedy is three-fold, for it hath Regard to Quantity, Place, and Time of Exhibition; for in these consists the right Use of the Remedy. Of Coindicants, Consentients, Contraindicants, &c. read the Authors who professedly write on them. C H A P.

* To explain this more fully, the *Conservatory Indication* signifies that whereby the Physician is enabled from some Appearances, and by just reasoning, to support the Body as near as possible in its natural State.

The *Preservatory Indication* directs what is to be done, and what Means are to be apply'd, to cut off the Cause of an approaching Disease. And the *Curative Indication* shews how to remove a Disease, when actually formed.

C H A P. II.

Of the Method of Living.

Q. **W**HAT do you understand by the Method of Living?

A. Taken in its greatest Extent, it means the Method to be observed in the Use of the Non-naturals, according to the different State of the Patient; but, in a confined Sense, it is taken for the Method of Diet to be observed by sick Persons; because it is the most difficult, and of the most Consequence, therefore I shall treat of it here.

Q. By what is it indicated?

A. This Method of Diet is indicated by the Weakness of the Patient, arising not from the Oppression, but from the Dissipation of the Blood and Spirits.

Q. Whence is the Difference of Diet taken?

A. The Difference of Diet, is taken from the Form, Quantity, and Quality, the Opportunity of using it, and the Manner of taking it.

Q. From what is the Form of Diet taken, and of how many Kinds is it?

A. The Form of Diet is taken from the Quantity us'd; and it is that Method of Living, by which the Strength is preserv'd, not confined to a particular Quantity, but varied according

according to the different Degrees of the Patient's Strength.

Physicians make three Forms of Diet, *viz.* the Strong, and Healthy; the Weak, and Thin; and the moderate Diet.

Q. Of what does the thin Diet consist?

A. There are several Degrees of thin Diet; as the thin, the thinner, and the thinnest, &c. of which, the last is next to nothing: After this, is the thinner, which consists of Water, mix'd with Honey, Ptisans, Barley-Water, Chicken-Broth, Panada, Apples, or Pears, boil'd, &c. that are order'd according to the different Degree of Acuteness in Diseases.

Q. Where is the thin Diet proper?

A. The thin Diet is proper in acute Diseases; the strong, in healthy Persons, that are of a strong Constitution: The moderate Diet, in long, and chronical Diseases.

Q. Is it worst to err in too strong, or too weak Diet?

A. I reply, distinctly, in this Manner: In long, and dangerous Diseases, it is worst to err in too thin, than too strong Diet; but the Contrary in acute Diseases, which I have often experienced; for in acute Diseases we never find the Patient worse for a thin Diet; but there are some who so far dislike all Sorts of Food, that they scarce eat any Thing. But they are never found to be so ill affected by this, as by Fullness of Meat, which often throws them into great Oppressions, Anxieties, Watchings,

238 *The Rudiments of Physick.*

Watchings, aggravating of the Fever, or a Weakness of the native Heat, so that the Blood has not sufficient Motion to expel the noxious Matter; therefore it is a Proverb among Physicians, *Nolo aegrotos meos obesos fieri*; I would not have my Patients grow fat.

Q. How do you determine the Quantity of the Food?

A. As to the Quantity of Food, in Diseases, the Patient may take more at the Beginning of a Disease, while he is something better; but near the State, or in it, he ought to take none, or very little.

But this Rule is not to be followed in every Disease: As for Example; in the Beginning of Inflammations, especially of the more noble Parts, whilst the Blood continues to flow to the Part affected; for then the Patient is to eat less, for Fear of encreasing the Inflammation; nor yet in every Disease without Inflammation, because it is not good to eat, if any Crudity lies conceal'd in the Stomach, or Intestines, which often happens, for then it is best to take off that Crudity by a parsimonious Diet.

Hence it is the Custom of Physicians, and well grounded, to allow little Food in the Beginning of Diseases. Nevertheless, he would commit the worse Error, who should eat too little, rather than too much, at the Beginning
of

of a Disease; but the Contrary, in the State of the Disease.

For do not certain Affections require peculiar Diet; such a Temperament, and such a Habit, or Custom, require a Diet conformable to it? Custom, and Affection, often contraindicate, but the Temperament, and Affection, never do.

The Quality of the Diet, is prescribed by the Affection, Custom, and Temperament; but it is not indicated by the Strength, for that only indicates the Substance of the Food, considered as Nourishment, not its Quality, as an Alterative; for, in that Respect, it is a Medicine, at least, a medicinal Food.

By the Quality of the Food here, you are to understand that which it contains of a medicinal Quality; as Heat, Cold, Humidity, Dryness, an opening, or binding Power, &c. and not the Quality, considered as mere Food; as to be of easy, or difficult Digestion; of good, or bad Juices; heavy, or light, &c. Therefore the Affection requires a Contrary; but Custom, and Temperament, a familiar Diet.

Moreover Custom, and Affection, often contraindicate each other; for if the Affection be hot and dry, it requires a cold and moist Diet; but, by Custom, the Patient being us'd to a hot and dry Diet, forbids the cold and moist. In this Case, to settle a due Method of Diet, you must consider how the Patient contracted

tracted that Habit; if he acquired it, because a cold and moist Diet did not agree with him, he ought to use the mean, and temperate Diet. If he acquir'd it, because he is not so ill affected by a moist and cold Diet, but grows worse from a hot and dry Regimen, then let him use the Diet contrary to the Affection, at the same Time making some Allowance for Custom, or Habit.

Lastly, if he is used to a hot and dry Diet, notwithstanding he would receive no Injury from the cold and moist, then he may freely use the contrary Diet in the strictest Method: The Affection, and Temperament, never contraindicate each other; for the Affection always indicates that which re-establishes the natural Temperament; and is always conformable to this Indication.

Q. Whence do you take the Manner of giving the Aliments?

A. The Manner of giving the Aliments; that is, often, or seldom, is pointed out by the Strength, and the Disease: This appears, because the Strength is weak, moderate, or great. A Disease hath many Humours, or few, or corrupt.

Weakness requires little Food; moderate Strength, a moderate Quantity; great Strength, a proportional Quantity: But where a Disease is accompanied with great Strength, and a Redundancy of Humours, as in plethoric Habits, there the Patient must eat seldom,
and

and sparingly. Where there is little Strength, the Humours few, and corrupt, there Food is to be taken often, and in small Quantities.

C H A P. III.

Of Blood-Letting, or Venæ-Section.

2. **I**S not Venæ-Section the Indicate of some Indicant, and not the Remedy essentially useful in many Indicates?

A. A. Venæ-Section, or Phlebotomy, is a very antient Remedy, us'd by every Nation, and is not indicated by any Indicant, but is the *Materia Remedii* useful in many Indicates.

This is proved, because, if it was indicated by any Thing, it would be a Plethora, but that only indicates the lessening the Quantity of Blood, which may be effected by Venæ-Section, Cupping, Scarrifying, Leeches, or low Diet, and by Exercise.

Therefore Venæ-Section is not the Indicate itself, but the mere *Materia Remedii*, and that very general; for there are few Diseases in which, if the Strength permits, Venæ-Section is not required (as the essential Remedy) but chiefly where the Blood exceeds its due Quantity. This confines the Blood, when hot and thin, within the proper Limits of its Circulation.

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But,

242 *The Rudiments of Physick.*

But, it is certain, that a Cacochymy is sooner corrected by alterative Medicines, and a contrary Diet, than by Venæ-Section.

Q. How many Venæ-Sections did the anti-ent Physicians reckon?

A. Three; the Evacuatory, the Revulsory, the Derivatory: I admit, I know but of one, and that is Evacuatory; and it is better to consider all that used to be attributed to it, under this Head; for, by evacuating Part of the Mass of Blood, the Remainder is better contained within the Vessels, and the usual Course of Circulation, by which Means we guard against a further Afflux, or Inflammation in the Part pain'd, bruise'd, or wounded, &c. also by evacuating part of the Mass of Blood, the Veins are proportionally emptied, and so the extravasated Blood (as in the Quinsy, Pleurisy, and other Inflammations) not yet congealed, or, at least, dissolved by Medicines, returns more easily into the Veins.

Q. Is there any particular Vein, the opening of which, is a specifick Cure for any particular Part, or Disease?

A. If we consider the Circulation of the Blood, it is indifferent what Vein is opened: Yet, in Suppression of the Menstrues, we order the Vein of the Foot, or Saphena, to be opened, because it very much conduces to promote the menstrual Flux; for, by this Vein, the Blood is derived downwards, and the crural and iliac Arteries are sooner exhausted; whence

whence the Blood flows with more Celerity and Force into them, and also into the Arteries of the Womb, that are derived from the former, and, by this Means, uterine Obstructions are often opened.

Q. What Veins are commonly opened?

A. They are these, *viz.* in the Head, the jugular Vein, the temporal Vein, and the Vein of the Forehead; in the Arm, the Cephalick, Mediana, and Basilick; in the Hand, the Salvatella, and Cephalica; in the Foot, the Ischiadal*; the Veins that are in the other Parts of the Body, do not appear so plain.

Q. What Caution are we to use in Venæ-Section?

A. In the first Place, you are to take Care, in cutting any of the said Veins, that no adjoining Nerve, or Tendon, is hurt, lest Convulsions, and other bad Symptoms, and even Death, should ensue; and that you do not prick any Artery lying under the Vein, for this would easily bring on a Rupture of the Coats of the Artery; also, in closing the Wound, no Blood should be left between the Lips, lest an Inflammation, and other bad Effects, might follow; but it must first be well wash'd and cleaned, and afterwards bound up.

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Secondly,

* Of these there are two, the Greater, and the Lesser; the former proceeding from the Toes, by ten small Branches, and uniting together, pass through the Muscles of the Calf of the Leg; the other being formed from several Ramifications, proceeding from the Skin and Muscles, encompass the Articulation of the Thigh, and thence are called Sciatic Veins.

244 *The Rudiments of Physick.*

Secondly, Care must also be taken, that a Vein is not opened too rashly in the Plague, the Small-Pox, and in petechial, and other malignant Fevers, lest the Malignity should creep into the emptied Veins *, and be drawn inwards from the outward Parts.

Thirdly, Neither must a Vein be opened in the Acme, or Height of Fevers, where the Strength must not be lessen'd; nor in the cold Fit of an intermitting Fever; nor in Women with Child, especially in the Beginning and Latter-End of their Pregnancy, not in the Foot, lest the Fœtus, while it is slightly fastened to the Womb, should be excluded before its Time, by the great Afflux of Humours. There is less Danger in bleeding in the Arm, for pregnant Women, from the third Month, to the seventh; and many Ladies open a Vein during their Pregnancy, and think it conduces to the Health of the Fœtus, and generally with good Success. But *ne quid nimis*; that is, do not take away too great a Quantity; it is better to do it at several times.

Old Men, and Children, do not so well bear Bleeding, because they want Nourishment; and, having lost their Heat, and Blood (if it be good) they do not easily regain it: But,

* In this Case, a Lessening of the Quantity of a spirituous Blood, will likewise lessen the Quantity of Spirits secreted in the Brain; the Consequence of which will be, that the Heart and Arteries will not contract themselves so often, and so strongly, as before; therefore what Nature before intended to be eliminated by the Pores of the Skin, will be again absorbed in the Circulation, and frequently fix itself on some vital Part.

But, sometimes, in the Quinsy, Pleurisy, &c. they loose Blood with Success.

We may take more from a fleshy, than from a fat Person; and the same also from lean Persons (provided they are not so from a parsimonious Way of Living, or from Labour, &c.) for such Bodies have the most Blood.

Q. What is to be done, that the Vein may rise plainly in View, that the Blood may flow more freely, and that the Patient may not faint away?

A. That the Vein may more plainly appear, make a Ligature above the Opening (as Surgeons use to do) by which the venal Blood, returning to the Heart, is something stopped in the Vein; it is usual also to shut the Hand, or to put something into the Person's Hand, to move about with their Fingers: Or, if the Opening is in the Foot, it is put into warm Water, that so the Blood, being rarefied, might flow with more Freedom, making a Ligature above, to hinder its Passage to the Heart: But where the sublingual, or jugular Vein, is opened, the Ligature must not bind the Neck too straitly, for Fear of choaking the Patient.

Let the Vein be cut with a steady, not a shaking Hand, and something obliquely, or sideways, for, by this Means, it will not slide from under the Point of the Lancet. If, when a moderate Orifice is made (not a little one, for

246 *The Rudiments of Physick.*

for that would evacuate only the thin Part) the Blood does not flow out, the Ligature must be loosened, because it binds the Artery that lies under the Vein, that so the Blood may flow more freely from the Heart to the Vein that is opened, or the Patient should cough, to accelerate the Motion of the Blood, by the Contraction of the Lungs.

2. Is it proper to give a Glyster before Venæ-Section?

A. Some Physicians will order a Glyster before Bleeding, that the Crudities of the Intestines, being thus evacuated, may not be carried into the emptied meseriæc Veins; and for the same Reasons, they will not allow of Bleeding presently after Meals.

But this Fear is ill grounded; for it appears, from Ligatures, that the Chyle is not carried from the Intestines, to the Heart, by the meseriæc Veins, but only by the lacteal Vessels, much less their Crudities, which are grosser, and more viscid; for if, after Eating, any Thing was to be feared from the Stomach, it would be the throwing up its Contents, occasioned by this Cause, that upon the retiring of the Blood and vital Spirits, from the Stomach, and other inward Parts, the fleshy Fibres being less inflated and constricted, are readily expanded by the Aliments, whence an uneasy Motion is impressed on the nervous Fibrillæ that are equally extended; which being communicated to the Brain, the animal Spi-
rits

rits are instantly rous'd, and rushing impetuously, through the Nerves, into the Fibres of the Stomach, its Action is subverted, and its Contents discharged.

2. Some are afraid of Bleeding in the Dog-Days; and believe, that the first Time of Bleeding will have so great an Effect, as to deliver them from a Disease: What do you think of these Opinions?

A. Many People dare not bleed in the Dog-Days, as if they had some particular ill Influence; but what is hurtful at this Time, is only the Heat, and the Faintness, that it is apt to occasion; therefore, if the Weather happens to be temperate, or if there is a Necessity, a Vein may be open'd. Nor are we to have any Regard to astrological Observations; for if there was any Occasion for them, you might take your Directions from an Almanack.

There are others, who will not bleed, by Way of Prevention, in the Month of *May*, lest they should be obliged to do the same every Year following; as if it was necessary, and they were then more particularly urged to it, or otherwise they would fall into some violent Disease; but all these are mere idle Fancies, and Chimera's.

For although, perhaps, in the Month of *May* following, the Blood should be heated, and distend the Body; yet, if Bleeding should be omitted, it is not therefore certain, that a
Disease

248 *The Rudiments of Physick.*

Disease would ensue. And that which some People imagine, that the first Time of Bleeding will cure them of a Disease, is equally ridiculous. Although almost all Remedies are of greater Efficacy the first Time they are used, than when, by frequent Use, our Bodies are accustomed to them.

Q. Doth Bleeding promote the Motion from the Circumference to the Center, or the Reverse; and does it cool the Body; and for what Reason?

A. To the first, I answer: Upon a moderate Evacuation of the Blood, by Venæ-Section, during the Time of Bleeding, the Vein being emptied, the Blood flows with more Celerity into the correspondent Artery; and also afterwards; for having a freer Passage, it is better dispersed through the whole Body; so that, in this Sense, Bleeding promotes the Motion from the Centre to the Circumference; and also, from the Circumference to the Centre, for this Reason, because, by emptying those Veins which lie on the external Parts of the Body, the reflux Blood is more readily brought back to the Heart.

To the Second, that Bleeding both cools and heats the Body, in different Cases; it is cooling in Fevers; where, by accelerating the Motion of the Blood in the emptied Vein, and the Artery, its Particles cease to be agitated among themselves so swiftly and confusedly, in which swift and confused Motion the febrile

brile Heat chiefly consists, and by which the Parts of the Body are principally affected. Venæ-Section heats in a Plethora, where the Heat of the Heart is suppressed by the too great Quantity of the Blood; or, at least, the Blood, by its slower Passage thro' the Heart, is not so easily rarified, and agitated.

Q. Is it good to sleep after Bleeding?

A. I do not disapprove of Sleeping an Hour or two after Bleeding; it may do good, because it recovers the Strength.

Q. What are we to remark in the Blood extracted; and what Knowledge may we obtain from it?

A. In the extracted Blood, it is usual, first, to observe, if it congeals; if, for Instance, in a Fever, it does not congeal, it denotes, that the Blood is greatly corrupted, and its Texture dissolved: But, where there is no Fever, it denotes, that the Chylification, and Sanguification, are imperfectly perform'd; and further, that the natural Heat is weakened.

If the Blood is very fibrous and thick, and strongly congeal'd, it is a Sign of Strength, of good Chylification, and Nutrition.

N. B. If a certain Mass floats on Top, like the Jelly of Panada, or Gruel, of a whitish Colour, and not variegated, we are not presently to complain of the Corruption of the Blood, like some ignorant Practitioners, but it is often Phlegm, or Chyle, which circulates with the Blood, into which it

is to be turned; and this is oftner found in ill Habits of Body, because, in such, the Chyle is longer preparing.

As to those whitish Fibres, which appear in the Blood, when it is diluted with Water, they are only Particles of Phlegm, or Chyle, not sufficiently divided, but mutually joining, and cohering, as I said, when I treated of the Blood.

Lastly, if a great Quantity of Serum is found with the Blood, it denotes too great a Quantity of Drink lately taken, or the natural Heat weakened, or an insufficient Evacuation by Urine, or insensible Perspiration.

C H A P. IV.

Of the Section of an Artery.

2. **S**HOULD not the Section of an Artery be used with much Prudence?

A. As the Blood is evacuated by Venæ-Section, so the same is performed by some Persons, by opening an Artery, or Arteriotomy, but it must be done with great Caution; for, though many Persons attest the good Success of this Operation, and I have known it cure great Pains in the Head, and other Diseases, nevertheless, there is Danger in the Operation,

Operation, because the Flux of the arterial Blood, is not so easily stopped, nor is the Incision so easily healed.

Q. What Artery is generally opened, and what is to be done, to make it appear plain?

Q. The Artery most usually cut, is that which lies over the temporal Muscle; there are others in the Forehead, in the Hinder-Part of the Head, in the Hands, and in the Feet; and, in general, where they can most conveniently be come at. When the temporal Artery is cut, to make it the larger, let a Ligature be made above the Place where the Orifice is to be made, which will lessen the Circulation of the Blood; or let the brachial Arteries be bound at their Beginning, that the Blood may be carried to the Arteries of the Head.

Q. How much Blood is to be taken away, and how is the Orifice to be closed?

A. The arterial Blood being of a more noble Nature than the venous, and more spirituous, cannot be taken away in such large Quantities, nor by so large an Orifice, otherwise there would happen some considerable Change in the inward Parts, which might occasion a Syncope, &c. Apply some very astringent, and sticking Plaister, to the Wound, and secure it with a Ligature, &c. and continue it to the 8th, or 9th Day, till the Wound is perfectly cured.

C H A P. V.

Of Leaches.

2. **I** Desire to know in what Cases Leaches are used?

A. We apply Leaches to those Parts where we cannot so well use Venæ-Section, or Cupping, as the Nose, the Lips, the Fingers, and Toes, the Womb, the Fundament; and likewise to Children, and others, when we need draw but little Blood.

2. Which are the best?

A. They are the best, that are caught in clear Waters, of a middling Size, Liver-colour'd, the Belly reddish, the Back greenish, and interspersed with Gold-coloured Streaks: The others are venomous, very red, and have a thicker Head, and are found in foul Waters.

2. How are Leaches to be used?

A. These Animalculæ have little Teeth, extremely sharp, with which they take hold of, and pierce the Skin of Men, and other Animals, and stick to them, while they suck the Blood. That they may suck the more readily, anoint the Place with a Drop of Pigeon's, or Chicken's Blood, or rub it to a Redness, or prick it slightly, and do not handle them with the bare Hand, but with a clean Linnen Cloth. When they are fastened
(if

(if much Blood is to be taken away) cut off their Tail, with a Pair of Scissars, so the Blood will run through them, as through a Syphon; but Care must be taken, that the Teeth do not remain in the Part, which would cause a Wound almost incurable, and sometimes mortal. Therefore it is better they should suck till they are glutted, and fall off themselves, or to remove them, by putting Salt upon their Heads, and apply others in their Room, to draw off the Quantity of Blood requir'd.

I could add several other Questions, as whether those fresh taken, are better than those, that have been longer kept? Whether they suck only the melancholy Blood, &c. which, for Brevity's Sake, I omit.

C H A P. VI.

Of Cupping Instruments.

2. **W**HAT are Cupping Instruments? Where, and how are they to be applied?

A. They are certain Instruments made of Glass, Horn, Metal, &c. to be applied to the more fleshy Parts, to which they firmly adhere: They are not to be placed upon Tendons, where they cause Irritations; nor upon Arteries,

254 *The Rudiments of Physick.*

Arteries, where they, sometimes, occasion too great Expansions. They are applied more or less in Number, smaller, or larger, according to the Exigence of the Case, rubbing the Skin first, till it is red, with a warm Woollen, or Linnen Cloth.

The Method of applying the Glassses, is by holding each singly over the Flame of a Lamp of Spirits of Wine; and, immediately after the Air is heated, applying it to the Part, prepared by being rubbed, as aforesaid; and, being raised by the Glass, it is afterwards scarrified, with an Instrument made for that Purpose, and then the Glass is re-apply'd as often as is necessary, to take away the Quantity of Blood required.

Q. What is effected by Cupping, either with Scarrification, or without it?

A. When it is performed without Scarrification, it only draws the Blood and Humours to the adjoining Parts, that they may perspire more easily through the rarefied Skin. When the Operation is performed with Scarrification, besides the above-mentioned Effect, it evacuates the Blood and Humours in any desired Quantity; and so much the readier, if the Cupping-Glassses are first applied without Scarrification, by which Means the Blood is more readily drawn to the Skin.

Q. By what Means does the Cupping-Instrument act?

A. The

A. The Air being heated, is rarefied, so that it cannot be contained in it, and part is therefore expelled; and the Pressure of the external Air becoming, by this Means, much stronger than that of the Air in the Glass, the Skin is raised, according as the Air in the Glass is more, or less, rarefied.

Q. Do not some Persons mistake in their Way of applying Cupping Instruments?

A. They are very much mistaken, who cover the Instruments with warm Cloths, intending thereby to raise the Blood and Flesh more; for, in Effect, it hinders its rising; for the Air in the Glass, &c. is rarefied by the Heat, and depresses the Flesh: On the Contrary, the cold, ambient Air, by condensing the Air in the Glass, &c. takes off the Pressure upon the Flesh, and makes it rise better, as any one may be convinc'd of, by applying the Hand first warm, and then cold. The Glass, &c. is not to be pulled off by mere Strength, for this would be painful, but the Air must be let in, by pressing down the Flesh with one Finger at the Side, and then it will come easily off.

Q. What is the Use of Cupping * in Physick?

A. The Use of Cupping, is very effectual; and especially, to extract any Thing poisonous, or malignant, out of the Body; nor does it produce so sudden an Alteration in the Body.

Q. What

* Cupping is also used to promote the Menfes; applied to the Navel in the Cholick, to the Head in Apoplexies, and to the Neck in Defluxions of the Eyes.

256 *The Rudiments of Physick.*

Q. What Blood is it that is extracted by the Cupping-Glasses, &c.

A. It is the best Blood, as it is expressed by the incumbent Air out of the capillary Arteries of the adjoining Parts; yea, out of the very Substance of them; therefore they receive Damage from it: So that those Physicians are very much in the Wrong, who dare not take ten or thirteen Ounces from their Patients by Venæ-Section, and yet will take away fourteen or sixteen Ounces by Cupping, as is often done.

Q. In what Manner are Scarrifications used in our Times?

A. The Antients used to extract the Blood, by making Scarrifications, or superficial Incisions, on the Calves of the Legs, and about the Ankles; but the more tender Race of the Moderns, will not suffer so much Pain; therefore they are only used in Cupping, or when any Part is attacked with a Gangrene, that, through the Pain, the Blood and Spirits might flow more copiously to it, and so preserve it from Mortification.

C H A P. VII.

Of Frictions.

Q. **H**OW are Frictions performed?

A. Frictions are performed either with Linnen, or Woollen Cloths, or by the Flesh-

Flesh-Brush, or by the Hand, &c. and continued till the Part is red, and either with, or without Pain.

Q. Do you think these Frictions make a Revulsion of the Blood, and Humours?

A. The Antients used them as a Revulsion, imagining that the Blood and Humours, which would otherwise flow to the Head, was, by this Means, drawn to some other Part, as to the Back, or to the Hand.

But here is no Revulsion made; nor do Frictions, in the Case mentioned, operate so deeply, that they should prevent the Flux of any Humour to the Head; or, if they should do any Thing of this Kind, it would be of so little Efficacy, and short Duration, as not to merit the Name of a Revulsion.

Q. Of what Use are Frictions in Physick?

A. You may read, if you please, *Cornelius Celsus*, who wrote a whole Chapter, and a long one, concerning Frictions: But, in my Opinion, they only serve to make the Blood flow more easily to the Skin; and, if it has any Thing noxious in it, to throw it off by Perspiration.

For gentle Frictions give Relief in slight Pains of the Head, and in an epileptick Fit, inasmuch as the Spirits are calm'd by the gentle Motion of the nervous Fibræ.

But the stronger and painful Frictions of the Fibrillæ, stir up and irritate the Spirits, so that they are carried with greater Force and

258 *The Rudiments of Physick.*

Rapidity through the Brain, and distend it, as in Watchings; therefore, in sleepy Disorders, they are good to rouse the Patient.

C H A P. VIII.

Of Ligatures.

Q. **A**RE Ligatures in Use at present?

A. The Use of Ligatures is now almost laid aside, because great Things are expected from them, but little effected.

Q. Do they cause a Revulsion, as is imagined, in some Cases?

A. They do, indeed, retard the Flux, or suppress it, but do not stop it; they are used in a Bleeding of the Nose, in the Flux of the Womb, &c. A Part that continues long bound, is frequently seized with a Gangrene.

C H A P. IX.

Of the actual Caутery.

Q. **W**HAT is the actual Caутery?

A. The actual Caутery, is a red hot Iron, by the Application of which, to any Part of the Body, it is suddenly burnt.

Q. What

Q. What is the Use of it?

A. It is used to close wounded Arteries, and to stop the Effusion of Blood in Amputations, in cutting off the Breast, &c. Vid. *Schultetus, Paræus, Fabritius, Hildanus.*

C H A P. X.

Of Caustics, and Blisters.

Q. **H**OW does a Caustic act?

A. A Caustic, or potential Caustery, or Escarotic, acts in this Manner; because its Particles, and Pores, are so disposed, that, whilst the Humours, or Juices of the Body insinuate themselves into them, the subtile Matter finds in them certain Passages so disposed, that, through them, it moves more violently, and therefore impels some earthy, rigid, and acute Particles more impetuously upon the neighbouring Parts, and so produces a greater, or lesser Heat that corrupts, or changes all Things in Proportion to the Degree of its Motion, and of the Particles moved.

Q. Of what Use is the potential Caustery?

A. It serves to open the Thorax, Impostumes, &c. that they may not be so deeply cut, as with the Incision-Knife, Probe,

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Scissars,

260 *The Rudiments of Physick.*

Scissars, &c. and the Aperture is safer, and less painful: It also consumes luxuriant Flesh; but beware of the Nerves, Tendons, and larger Vessels.

Q. How does a Blister act?

A. A Vesicatory, or Blister, is of the Nature of a Caustic, and acts in the same Manner, but not so strongly, whence it does not so much destroy the Cuticle: Its Use is in Fevers, and sleepy Disorders. See *Geor. Bagliv. Roman. De usu & abusu Cantharid.*

They are also serviceable in Cases where any Thing acrid is to be excreted from the Blood.

C H A P. XI.

Of Issues, and Setons.

Q. **W**HAT are Issues, and how are they made?

A. Issues are certain little Ulcers, which are made by Art, in various Parts: They are made by the actual Cautery, or hot Iron, by burning the Skin; or by taking hold of the Skin with the Fingers, and raising it up, then cutting it with Scissars, or a Lancet; or by a Caustic; after the Crust is fallen off, and the Orifice is of a proper Bigness, a Pea, or a Pellet of Lint, is to be put into it.

Q. Where

Q. Where is the properest Place for them?

A. The Place for Issues, in the Arm, is between the Deltoide, and Biceps Muscles. In the Thigh, on the Inside, above the Knee, oblique about the Distance of two Inches.

Q. What is their Use?

A. They discharge noxious, or superfluous Humours.

Q. What is a Seton?

A. A Seton, is a Skain of Silk, or several Threads joined together, of a proper Thickness, dipp'd in Wax, or some digestive Ointment, which is drawn thro' the Skin, raising it up from the Flesh, with the Fingers, or a Forceps; the Point of the Needle may be red hot, or cold; and the Distance between the Entrance of the Needle, and the Place where it is drawn out, may be about two or three Inches. It is generally placed in the Neck, from the first to the fifth Vertebræ; and, sometimes, in the Arms, in the Thighs, &c.

Q. What is to be done, upon making a Seton?

A. In the Beginning, you are to guard against an Inflammation; you must also apply Digestives, and the String is to be moved several Times a Day, from the Right to the Left, and the Reverse; and this must be done till the Complaints cease.

Q. Doth not a Seton act more strongly than an Issue?

A. It

262 *The Rudiments of Physick.*

A. It is more efficacious than an Issue, but much more troublesome; therefore is seldom made use of, but where other Methods have been try'd in vain.

C H A P. XII.

Of Suppositories.

Q. **H**OW do Suppositories act?

A. Like other Cathartics, for they stimulate the Fibres of the Rectum, by which the other Fibres of the Intestines are moved by Consent, and the peristaltic Motion is encreas'd, and, by irritating the Humours, they promote Stools.

Q. When are they used?

A. Conveniently in burning Fevers, for keeping the Body open; and in several Complaints of the Anus, and Intestinum Rectum; because that is the Place of applying them.

C H A P.

C H A P. XIII.

Of a Glyster.

Q. **O**F what Use are Glysters?

A. They are useful in Disorders of the great Intestines; for they do not reach beyond them, by Reason of the Valve that is at the Beginning of the Colon, unless it should be relaxed, or preternaturally forced open by the too great Violence of the peristaltic Motion?

Q. Why are Glysters hurtful, if too cold, or hot?

A. Glysters should be injected neither hot, nor cold, but moderately warm; if too cold, they would congeal the Blood of the meseriatic Vessels, from whence Obstructions, Gangrenes, and other more dangerous Disorders would arise; if too hot, they would produce Exulcerations, Pains, Flux of Blood, &c. in the Intestines.

Glysters are of great Use in Physick; they are sometimes used as an Alterative, or to disperse a Flatus, or soften the Fæces, or to deterge and liquify viscid Humours sticking to the Bowels; or to prepare the Way for a Purge. Glysters are also used to assist, by its Irritation, a purging Potion, that does not
pass

264 *The Rudiments of Physick.*

pass through the Intestines, and to make a Revulsion of the Matter, and take away the antecedent Causes of Diseases: So in sleepy Disorders, Glysters are convenient that strongly irritate the Fibres of the Intestines, and open the Orifices of the Vessels, by which the Humours are drawn toward the Intestines; they are prepared of Colocynth, Rad. Pyrethri, Croc. Metallor. and other Antimonial, to bring down the Menfes, to appease Pains, to strengthen the Intestines, &c. as in the Dysentery, or Bloody-Flux.

Q. How do you determine their Quantity?

A. Their Quantity is indicated by the Bulk, or Repletion of the Intestines of those that use them, and from the Part they are to reach.

If they are for Children, they must be less than for grown Persons; and less also, where the Intestines are distended with the Fæces, or a Flatus; and, lastly, less where the Intestinum Rectum is only affected, as in a Tenesmus.

They most generally contain eight, ten, twelve, or fourteen Ounces.

Bitter Glysters are injected for Worms, and Anodynes in a Flatus, or Chölick; stronger in Apoplexies, and sleepy Disorders: Balsamics, and Carminatives, in Pains of the Bowels: Emollients, where Excrements are hardened: Laxatives, Lenients, saponaceous Medicines, and those of Turpentine, are injected in the Stone

Stone and Gravel. See *Mynsicht*. *Bates's* and *Fuller's Pharmacopeia*, &c.

C H A P. XIV.

Of Vomitive, or Emetic Medicines.

Q. HOW does a Vomit operate?

A. A Vomit, or an Emetic, by its aculeated Particles, impresses a preternatural Motion on the nervous Fibrillæ of the Stomach, which are very numerous: The animal Spirits rush plentifully out of the Cerebrum, into the Fibres of the Stomach, and the Motion which they gave it downwards before, is now changed upwards, and so the Contents of the Stomach, by its convulsive Motion, in which its Fundus and Sides are drawn towards the left Orifice, are expelled, and thrown upwards by the Constriction of the Fibres.

Q. How do nauseous Things occasion Vomiting?

A. Because they cannot be well mix'd with the Acid of the Stomach, with the Saliva, and the rest of its Contents; whence they fluctuate in the Stomach, and by this their Motion, and, by the Nausea they produce, they irritate the Spirits to a more copious In-

266 *The Rudiments of Physick.*

flux into the Nerves and Fibres of the Stomach, which they then more vehemently and preternaturally contract.

Q. Does Vomiting agree with all Persons?

A. It does not agree with all Persons alike; Persons in Health, vomit with Difficulty; and also those who have small and narrow Chests, phthysical Persons, those who are subject to Head-Achs, those who have Ruptures, or have any Reason to fear one.

N O T E,

1. Emetics are of more Efficacy than Purgatives, because their Spiculæ enter deeper into the inner Coat of the Stomach, and so do more vehemently contract, and irritate its muscular Fibres.

N O T E,

2. When they have entered the Mass of Blood, they do not effect so much as Purgatives.

Q. What Constitutions do Vomits best agree with?

A. Those who are troubled with a Nausea, and Loss of Appetite, where the antecedent Cause lies concealed in the Stomach, and those who bear Vomiting easily; and where Purgatives have been used without Success; chiefly when the peccant Matter hath been attempted before, as (Viscidities by inciding Medicines, &c.)
and

and so a Way is prepared for exhibiting an Emetic.

N O T E,

Frequent, and difficult Vomiting, relaxes the Tone of the Stomach, weakens the Viscera, and offends the Head. Tartarum Emeticum, Mynsicht. Ipecacoanha, Vin. Benedict. Oxymel, Scyllit, Guttæ-Gambæ, Turpeth-Mineral, or Emet. Flav. are the Vomits now chiefly used by the Physicians of *London*.

C H A P. XV.

Of Purgatives.

2. **W**HAT is a Purge, and how does it operate?

A. A Purge, or Cathartic Medicine, strictly taken (if it is of the milder Sort, as Cassia, Senna, Manna, &c. is called a Laxative) when received into the Stomach, is dissolved by its Heat and Moisture, and its Parts dispersed; by which the Humours it first meets with are dissolved: Hence some Parts of the Medicine, that are thinner and easier put in Motion, by vellicating the Fibres of the Stomach, are carried to the Intestines, and from them into the lacteal Veins; they are then mix'd with the venous Blood, like the Chyle, and flow with

268 *The Rudiments of Physick.*

it to the Heart, and from the Heart, are distributed, with the Chyle, by the Arteries, through the whole Body, and incide the Humours thereof, by the Motion and Acuteness of its Particles, till it enters the Intestines, still accompanied with the Humours through the Ductus Choledochus, and pancreatic Duct, but chiefly through the mesenteric Arteries.

Q. How happens it, that, sometimes, Cathartics cause great Pains of the Belly, and excessive Purging, Dysenteries, &c.

A. It is caused by the grosser Parts of the Medicine, that cannot enter the lacteal Vessels, and variously offend, abrade, and irritate the Coats of the Intestines; whence proceed Pains, excessive Purging, and Dysenteries.

Q. Does any Cathartic purge electively, or operate only upon some particular Part?

A. No Cathartic purges electively, or is destin'd to carry off some particular Humour: It is wrong to imagine, as some do, that those Medicines, they call Cholagogues, do only purge the Gall; and Phlegmagogues, only Phlegm; and Melanagogues, only Melancholy; and Hydragogues, only Serum.

It is also certain, from the cadaverous Smell of the Humours, evacuated by Purgatives, that not only some Humours of a healthy Kind, but also some Particles of the Blood, perhaps, torn from the solid Parts, or that were intended for Nourishment, are carried out of the Body; and also, for this Reason, that,

that, if a healthy Person takes a Purge, he will void as many Humours, or more, than a sick Person; than how is it credible, that such a Quantity of bad Humours should lie concealed in a sound Body? And, besides the Humours, many Spirits, without Doubt, out of the Mass of Blood, pass into the Intestines, and are carried off by Stool.

Therefore, by the Way, I would always have my Pupils be cautious how they use Cathartics, and not have Recourse to them upon every slight Occasion, especially the stronger Kind, as if they were the only Remedy in all Diseases, for they are never used without some Detriment to the Body.

2. What is the Indicant of Purgation?

A. The Indicant of Purgation, is some Cacochymia, or ill Habit, that deserves Notice, not every wandering Fluctuation, or Motion of the Humours, which might rather be carried off by Cupping, Friction, Sudorifics, or Diuretics.

2. How many Things is a Physician to consider, in prescribing a Purge?

A. 1. Whether a Purge is convenient, and for what Persons. 2. The different Temperament of the Patients. 3. The Degree of Purgation necessary, and how often it is to be repeated. 4. The Time. 5. The present State of the Passages.

r. Purging

270 *The Rudiments of Physick.*

1. Purging is proper, where a Person is affected by some Cacochymia, as before mentioned.

A. It is to be considered, whether the Strength of the Patient will bear it, or whether the Constitution, the ambient Air, and other Circumstances, will permit.

If the Patient has the Plague, petechial Fever, or Small-Pox, &c. he must not be purged, otherwise, as Purgatives lead from the outward Parts to the inward, Perspiration and Sweat would cease, upon the Continuance of which, the Cure of the Disease greatly depends; and the morbid Matter being thus drawn inward, would occasion terrible Symptoms, and greatly endanger the Life of the Patient.

Q. Whence do you conclude, the Patient can bear Purging?

A. From the Pulse, the Age, Sex, Temperament, Habit of Body, and Way of Living of the Patient.

Q. What Age can best bear Purgatives?

A. Middle-aged Persons bear Purging best, Infants worst, and Old Age next to Children.

Q. Which Sex bears Purging best?

A. Men bear Purging, better than Women; but there are some Women who bear the strongest Cathartics, and are scarce moved by them, chiefly those who labour under a Suppression of the Menfes, or are dropical.

Q. What

Q. What is to be considered, in purging of Women?

A. First, they must not be purged in the Time of the menstrual Flux, as the Humours being thrown, by Revulsion, on the Intestines, will stop the Menses; nor are they to be purged during their Pregnancy, but with the utmost Discretion, lest the Medicine, by irritating the Uterus, should cause Abortion.

The safest Time, in pregnant Women, is from the fourth, to the seventh Month, and not before, because then the Foetus being stronger, and the Womb more expanded, they are better able to resist the Irritation.

But it is grown a Custom, of late, to purge Women at any Time of their Pregnancy, but this only with the milder Cathartics.

Q. What Temperament bears * Purging best?

A. The

* Purgatives make one of the most important Articles in Medicine; therefore an Idea of their Manner of Operation, is thus given by a very eminent Physician. A purgative Medicine (says he) being received into the Stomach by the Mouth, its Particles do there stimulate the Fibres of the Stomach, and thereby increase its digestive Faculty (that is) bring the muscular Fibres of the Stomach, and the Muscles of the Abdomen, and Diaphragm, into more frequent Contractions, till the Medicine is admitted into the Intestines; the Fibres and Glands whereof, being more sensible than those of the Stomach, it easily moves, and brings them into more frequent, and forcible Contractions; whereby these Glands are squeezed, and so emit a fluid Matter, which lubricates the Passages, and mixing with the feculent Matter of the Intestines, renders it more fluid, by which, and by the uncommon Contractions of the Intestines, it passes more easily into the Intestinum Rectum, and is thence ejected by Stool. Thus

do

272 *The Rudiments of Physick.*

A. The hot and moist Temperaments, and those that are full of Flesh; but not the dry, and fleshy Habits.

Q. Is it not good, sometimes, to prepare for a Purge, by a Glyster?

A. You are to consider, before Purging, whether there is not too great a Retention of the Faces; for, in this Case, a Purge might do great Injury to the Intestines; therefore it would be proper to premise a Glyster.

Q. How do you discover the Degree of Purging necessary; and how often is it to be repeated?

A. If there is little peccant Matter, and much Strength, as in the Rheumatism, &c. we may evacuate it at once; but if the Patient is weak, whether the Matter be little, or much, it is better to carry it off at several Times, or by Epicrasis, or gentle Purging, than by one Dose; and the same is to be observed where the Matter is very copious, and the Patient strong. We are to consider here also, where the peccant Matter is lodg'd; if in the extreme Parts (as in the Gout) or if

it do gentle Purges act, and only cleanse the Intestines; few of their Particles entering the Lacteals, so as to affect the Blood. But in the more violent Purgatives, the stimulating Particles are mixed with the Blood, and produce there very great Effects, by occasioning, many times, preternatural Fermentations, and separating the natural Cohesions of the Fluids of the Body; and do also, by vellicating the spiral Fibres of the Veins and Arteries, bring them into more forcible Contractions, and accelerate the Motion of the Blood: All which may, sometimes, have a good, and, sometimes, a very bad Effect, according as the Constitution is more, or less, affected by them.

it is viscid and gross (as in the viscous Asthma) it is not to be hastily removed by one Cathartic; but by several gentle Doses, or by Epi-crasis.

Q. When is the proper Time?

A. As to the stated Time of Diseases when Purges are proper, if we consider the general Time, or State, it is best to purge in the Declination; also, often, in the Beginning, as it is my Custom in many Diseases, before they arrive at their Height, and whilst their Strength permits, to take away part of the morbid Matter: But, if we consider particular Times, I prefer the Time of Remission, or Intermision, for Purging. But it may be proper also to exhibit an Emetic, or Cathartic, in the very Paroxysm, if the Matter be turgid, or very viscid; for then it will be more easily evacuated, than by the more gentle Purgatives.

Of the Dog-Days, it is to be considered, that *Necessity has no Law*; nor are all Dog-Days equally sultry.

Q. What are we to observe of the Passages?

A. We are to remark four Things of the Passages, by which a Purge operates:

1. Whether they will bear it?
2. Whether they are free, and open?
3. Whether they are near the Place that contains the noxious Humour; and whether there is a Communication between them?

M m

4. Whether

274 *The Rudiments of Physick.*

4. Whether they have their natural Constitution?

Hence we ought not to purge other Parts through a Part affected, lest it receive further Damage; not the Intestines, by the *Æsophagus*, because the Stomach is not their excretory Passage, and is not accustomed to it.

Nor is it material, for the Proof of this Argument, whether Purges are given with Success in a Dysentery, where the Intestines are corroded; because the noxious Humours are then in the Intestines, or are continually coming into them; therefore it is better to throw them out soon, than to let them continue there with greater Danger.

Q. What are we to do, after taking a Purge?

A. After taking a gentle Purge, that it may operate the better, we are not to sleep upon it: Much less, if it is strong, and of a refinous Nature, as of *Colocynth*, *Hellebore*, &c. But if it is a Medicine in a solid Form, as a Bolus, but chiefly in Pills, we may sleep a little after it. It is good to take a little Beer-Posset, or thin Chicken-Broth, after the Medicine is distributed, and begins to operate, that the Remains of it may be washed out of the Intestines: Let not the Posset, or Broth, be strong, unless the Purge hath something malignant in it, or there is Reason to fear an Over-purging; otherwise, according to the Nature

Nature of fat Substances, they will blunt the Force of the Medicine.

If a Person purges in a Morning, let him eat sparingly at Dinner; for the Stomach then, for Want of Spirits, and through the Strength of the Medicine, will not digest so well; but, in the Evening, when he is recover'd, he may eat more plentifully. Our Physicians, in *England*, frequently prescribe Purgatives after Purgings, to appease the Tumult of the Blood and Spirits; but this Rule is not to be generally observed, for all Purgatives are binding.

C H A P. XVI.

Of Alexipharmics and Sudorifics.

2. **L**ET me know the good Effects of sweating Medicines, and how this Practice may be defended?

A. Sweating Medicines, or Sudorifics, are far preferable to Cathartics, and Venæ-Section.

2. How do Sudorifics, or Diaphoretics, operate?

A. For the most Part, they carry off the morbid Cause quietly, successfully, and without Injury: We see this in the Plague, petechial

276 *The Rudiments of Physick.*

chial Fevers, and other malignant Diseases. If Sudorifics can do this in the most violent Diseases, what may they not perform in flighter?

I know many Physicians will use scarce any Thing, in Fevers, but Purging, Venæ-Section, and cooling Medicines; and they say, that Sudorifics are too hot, to have any good Effects; but let them know, that they are not all equally hot; and, though some are hot, they are safer than Purgatives.

If they say Sudorifics only carry off the Serum, but not the grosser Humours; I say, the Pores and Glandules of the Skin, are as open as those of the Liver, Pancreas, and Intestines, by which Purgatives act; therefore gross Humours may be as well carried off this Way; especially, as Sudorifics do also attenuate the grosser Humours.

Q. How do Sudorifics operate?

A. They operate from this Cause; that their Heat, and minute Particles, do greatly attenuate, incide, agitate, and rarefy the Humours of the Blood, and drive them forward, with whatever else they meet in their Passage, to the Glands, and Pores of the Skin, to be there condensed into Drops, or expelled by insensible Perspiration.

Q. Is Sweating good, that is raised by many Bed-cloths?

A. That Sweating is not good, being too much forced, oppressing, and weakening the Patient;

Patient ; but the Sweat that is brought on by a sudorific Medicine, passes off almost without any Trouble.

C H A P. XVII.

Of Diuretics, or Medicines that promote Urine.

Q. **W**HAT Encomium do you bestow on Diuretics, or Medicines that provoke Urine?

A. Diuretics, or Medicines that promote Urine, carry off with them, the Humours, and other Things, contained in them, without any Inconvenience, Danger, or remarkable Commotion of the Mass of Blood ; therefore they are most excellent Medicines, and to be given in the Beginning of almost all Diseases.

Q. Are Diuretics like Sudorifics?

A. They differ little in their Manner of Acting in the Body, for they attenuate gross Humours, dissolve congeal'd Humours, and open Obstructions ; and this by the Minuteness of their Particles. Hence all Things that promote Sweating, do also, in some Measure, promote Urine, and the Contrary : Medicines that strongly promote Urine, do slightly promote Sweating ; or, at least, increase

278. *The Rudiments of Physick.*

crease insensible Perspiration, and differ from Sudorifics, only in the Degree of their Operation.

C H A P. XVIII.

Of Expectorating Medicines.

Q. **W**HAT do you mean by expectorating Medicines?

A. Expectorating Medicines, or those that produce Spitting, are those Medicines that help to carry any Thing from the Lungs.

Q. How do expectorating Medicines act?

A. Some act by incrassating the Humours, if they are thin, that so they may be the easier ejected by the contracted Ramuli of the Bronchia, and so may not circulate again with the Blood; and, being carried to the inner Membrane of the Bronchia, they moisten and lubricate it.

Others act, by inciding and attenuating the gross Humours, as well in the Lungs, that they may yield to the Contraction of the * Ramuli of the Bronchia, as those in the Blood, that they may pass more freely thro' the Lungs, by the Minuteness of their Particles, and, at the same Time, irritate the Bronchia to Contraction and Expulsion.

C H A P.

* These are Expansions of the Membranes of the Bronchia, to which they hang, like Grapes, in Clusters.

C H A P. XIX.

Of Medicines that promote Salivation, Apophlegmatisms, Errhines, or medical Snuffs.

2. **W**HAT are the Use of these Medicines; which are the Principal; and how do they operate?

A. Medicines that promote Salivation, are often given to lessen the Serum of the Blood, but chiefly to carry off phlegmatic and serous Humours wherever they are concealed. The principal are Mercury, or Quicksilver, and its Preparations; which, whether applied outwardly, as an Ointment, or taken inwardly, is found most powerfully to evacuate sluggish Humours, even those that are coagulated in the Venereal Disease; but they are to be used with Caution.

They are such Medicines that, by the Fineness of their Parts, insinuate themselves into the Blood and Glands; and, in their Passage through them, open their Pores, and excretory Ducts, and at the same Time, by their easy Motion and Minuteness, they divide and attenuate the viscid Humours, that so they may more easily pass off by their usual Emunctories; therefore these Medicines are used

280 *The Rudiments of Physick.*

used in inveterate and stubborn Diseases, and generally where the Cause is viscid and latent, or in the Joints.

Q. Do not these Medicines act, sometimes, by different Ways?

A. Mercurials do not always act by Spitting only, but frequently also by Urine, Sweat, and violent Stools, as is evident in those who undergo the Cure of the Venereal Disease: But, unless some Error is committed in Diet, or a strong Purge taken, they use to act most by the salival Ducts, because these Glands are more lax than the others, and particularly designed, confirmed, and accustomed, to carry off viscid Humours.

Q. How do Apophlegmatisms differ from salivating Medicines; and how do they operate?

A. They differ from them, because they are not applied outwardly, nor given inwardly, but are chew'd, or used in Gargarisms, or applied to the Palate, and are much milder, and do not penetrate so far, and are such that, with their aculeated Particles, they open and irritate the Glands that are spread all over the Mouth, and dissolve their Viscidities.

Q. How do Errhines, or medical Snuffs, act?

A. Errhines operate almost like Apophlegmatisms, and irritate, rarefy, and draw Humours from the glandulous, or spongy Flesh, that covers the Nostrils, and the finer Parts of them

them may enter the Brain, and even its Ventricles, through the Os Cribrosum, and the olfactory Nerves, and attenuate and bring off the Humours from thence to the Nose; but Care must be taken that, by too great a Discharge of Humours from the Brain, we do not cause some greater Disorder, than that we intend to cure: Why they sometimes relieve the Brain, and sometimes not, as I said before, is, that the Mucus of the Nose, does not come wholly from the Brain, but also from the internal Parts of the Nostrils.

C H A P. XX.

*Of Sternutatories, or Medicines
that cause Sneezing.*

2. **W H A T** are Sternutatories?

A. Sternutatories, or ptarmic Medicines, are those which irritate the interior Membrane, or Membrana Schneideriana, with their Sharpness, and act more powerfully than Errhines; by which, exciting an uneasy Sensation in the olfactory Nerves, and the adjacent Parts, the Spirits, residing in the Brain, are vehemently moved, and the Meninges, or Membranes of the Brain (as the inferior Membrane of the Nostrils is derived from
N n them)

282 *The Rudiments of Physick.*

them) being moved by Consent of Parts, it happens that the Membranes of the Brain, and, sometimes, the Substance of it, are contracted, and impelling the Spirits into the Nerves of the Par Vagum, the Diaphragm, and intercostal Muscles, are put into Motion, and the Thorax violently contracted, till the Matter, causing the Irritation, is shook off.

Whence strong Sternutatories may occasion great Disorders, such as Convulsions, Obstructions of the Nerves, by throwing the Humours on them, and, in some Cases, even Death.

Q. What is their Use?

A. It is usual to give them in sleepy Disorders, that, by rousing up the Spirits, and putting them again in Motion, the Patient may wake; or that the Humours, which obstruct the Passage of the Spirits in the Nerves, may be thrown off.

C H A P.

C H A P. XXI.

*Of Medicines that promote the
Menses, and Veneries; that ge-
nerate Seed, and Milk, and ex-
pel the Fœtus, and Secundines.*

Q. **W**HAT are those Medicines, that promote the Menses, and generate Seed; and whence is it they have this Effect?

A. They are such as, by the Minuteness of their Particles, open the Extremities of the Womb, and the Testicles; and further, in Men, they more expand the tubulous Substance of these Parts, and so open a Way for the Blood to follow; or, by exciting a greater Fermentation in the Blood, impel it with more Force to the Uterine, and spermatic Arteries.

Q. Are not such Medicines hot and volatile?

A. They are so; and also carry a certain Acrimony into the Blood, that the Spirits may be moved with more Alacrity; and they also excite Lust, because they produce a greater Quantity of stimulating Seed.

Q. But what are those Medicines, that restrain the Menses, Seed, and Lust?

Q. Those that, by their Astringence, shut up the Passages to the Womb, and Testicles,
or

284 *The Rudiments of Physick.*

or that diminish the Motion of the Blood, and so cool it, or thicken it, and check or dull the Spirits; such an Effect have all Things that are cold, and less spirituous.

Q. How do those Things act, that encrease, or diminish Milk?

A. They act by diluting the Chyle, which makes it pass more easily through the lacteal Vessels of the Abdomen, and Thorax, and arrive at the Breast; they are generally Liquids that are something spirituous; but chiefly those Things that, being taken inwardly, or applied outwardly, do relax the Glands of the Breasts, and the lacteal Tubes, that so they may the better admit the Chyle. Contraries diminish the Milk.

Q. How do those Things act, that expel the Fœtus and Secundines, and those that preserve the Fœtus?

A. Those Things expel the Fœtus and Secundines, which, being carried to the Fœtus, irritate it by their Acrimony, and make it kick, and move so as to break the Secundines, or by stimulating the Womb, or by agitating the animal Spirits more violently, and by sending them in greater Plenty into its Fibres, throw it into Convulsions, and expulsive Motions: They preserve the Fœtus, that calm the like Irregularities of the Spirits, and that have an astringent Quality.

C H A P. XXII.

Of Medicines that dissolve the Stone in the Bladder, disperse Flatulencies, and kill Worms.

Q. **W**HAT are Medicines that dissolve the Stone in the Bladder?

A. They are called Lithontriptics; and are those which, by their rigid and inciding Particles continually falling into it with the Serum, do, by Degrees, wear it away; but this only while it is soft, and sandy.

Q. What are those Medicines, that disperse Flatulencies; and how do they perform it?

A. They disperse a Flatulence, that quiet the Fermentation from which it arises, or attenuate it, or cause it to perspire, by opening the Pores of the Parts containing it; or, lastly, that confine it by their Viscidity.

Q. What are the Medicines that destroy Worms?

A. Those Things destroy Worms, that are contrary to them by their Bitterness, or Saltiness.

C H A P. XXIII.

Of Medicines procuring Sleep, and mitigating Pain.

2. **W**HAT are Medicines which procure Sleep, and stupify; and how do they act?

A. Of those Medicines that procure Sleep, and relieve Pain, some are milder, as Hypnotics, or Anodynes; others stronger, called Soporiferous, and Narcotic, or Stupifying Medicines: They are such Things as, by their aqueous, and cold Humidity, dull the Spirits, or relax the Fibres of the Brain, and fix the Spirits with their Viscidity, or contract them into a smaller Space, or stop the Passages of the Nerves at their Origin, so that there is not a due Influx of the Spirits into the Organs of the external Senses: Or the Organs themselves are not rightly disposed, especially with Regard to their Fibres, which should be distended by the Spirits, either by Pain, or Watching, that the Motions impressed on them may be propagated to the Soul; and so Sleep, and a Cessation of Pain, must follow.

Opium acts in this Manner, and all the Compositions of it, or any Thing that partakes of the same Quality, as the Smoke of a Lamp,

Lamp, of a Candle, of Coals, Exhalations from some Caves, the Vapours from Beer working in Cellars, and other Things which we take in with our Breath, or as Food, either mediately, or immediately carried to the Brain; or, lastly, outwardly applied to the Head, or any other Part, and penetrating the Brain.

Q. What are lenient Medicines, and how do they act?

A. They are properly Medicines appeasing Pain, or Anodynes, that, by their kindly and moderate Heat, and the Softness of their Parts, do partly disperse, and partly temper painful Humours; and thus they take away, or lessen, the more violent and troublesome Motion of the Parts, which is the Cause of Pain.

C H A P. XXIV.

Of Cordials, or Medicines recruiting the Spirits.*

Q. **W**HAT are Medicines which recruit the Spirits; how many Ways do they act; and are they not of various Kinds?

A. Those

* Cordials, are comforting, or refreshing Remedies, that give sudden Strength and Chearfulness, by raising the Spirits, which were

A. Those Medicines restore the Spirits that, by their Tenuity, and Volatility, are easily and soon converted into Spirits, or excite those that are, in a Manner, benumb'd in the Brain, and Nerves, or that have not their proper Motion, and thus renew their Activity, whether they are taken inwardly, as Spirits of Wine, Cinnamon-Water, &c. or applied to the Nose, as various Odours, and Spirits, or anointed on the Temples; whether they reach the Spirits residing in the Brain, through the Os Cribrosum, or by the Way of the Blood, and thus put them into Motion, or whether they move them by a Motion communicated to the Spirits in the Nerves that are nearest, and they transfer, by the Means of others, the Motion to the Brain.

Those Medicines also revive the Spirits, which, when the Blood is too much dissolved, strengthen it, and preserve its Spirits, as some cold and subacid Medicines, or that attenuate it, when too thick and solid, and so not easily
resolvable

were too much depressed by Exercise, or some Disease. Cordials act, by giving a Springiness and Force to the Fibres, and by some of their fine Particles directly entering the Tubula, or Pores of the Nerves, and minute Vessels, and so mixing immediately with the Fluids. Thus some of the Particles of Spirit of Lavender are supposed to enter the Nerves of the Palate directly; and, in Faintings, where the Circulation is languid, Sal Volatile, or Spirits of Hartshorn, dropp'd in cold Water, and drank, immediately occasion a Contraction of the Fibrillæ, the last by its Coldness, and the first by entering the minute Vessels; and thus they instantly augment the Circulation, or, in other Words, recruit the Spirits, and prove Cordials.

resolvable into Spirits, or their Parts, by dissolving the Acid which coagulates the Blood, as Pearls, precious Stones, Crabs Eyes, &c.

C H A P. XXV.

Of the Manner of Acting of various other Medicines.

Q. HOW do Emollients * act?

A. By warming and moistening the Parts, and dissolving, and partly dispersing Obstructions, they cause a Relaxation.

Q. How do Indurants act?

A. By dispersing the finer and softer Particles (as in a Schirrus, from taking too hot Medicines) or by retaining and congealing them (as in an œdematous Swelling, from
O o taking

* Dr. Quincy defines Emollients to be such Things as soften and sheath the Sharpness of the Humours, and relax the Solids at the same Time. It is easy to conceive how these should be both effected by the same Medicine: For, whether in the Stomach, or other Parts, the Juices have obtained a Sharpness, so as to vellicate the Fibres, and nervous Parts; those Things which are smooth and soft, cannot but sheath their Points, and, by the proper Course of Circulation, be brought to some convenient Emunctory, without doing any Injury by the Way.

Such Sharpness of Parts, likewise draws the Fibres into Spasms, keeps them too tense, and frequently occasions Obstructions of the worst Kind: In all such Cases, Emollients lubricate, and moisten the Fibres, so as to relax them into their proper Dimensions; whereupon such Disorders cease.

290 *The Rudiments of Physick.*

taking too cold Medicines) they unite the Parts more strongly together.

Q. By what Means do rarefying Medicines operate?

A. By dissipating the Vapours and Humours with their moderate Heat, they enlarge the Pores of the Parts.

Q. In what Manner do condensing, astringent, and aperient Medicines act?

A. Condensing Medicines check the Motion of the Parts by their Coldness, which being collapsed, are more closely united.

Astringents * have such a Formation of their Particles, that they can draw towards themselves, and constrict the Parts of the Body, drawing them into the Shape of Wedges; they are cold.

Aperients † act by penetrating deeply the Parts of the Body with their aculeated Particles, and, by throwing off the gross Humours, they open their Pores and Passages; some are hot, and others cold.

Q. How do incrassating Medicines act?

A. By

* Astringents chiefly act, either by the Asperity of their Particles, whereby they corrugate the Membranes, and make them draw up closer; or by thickening the Fluids, whereby they cannot run off so fast as before: Astringents therefore stand opposed to Laxatives; and only differ from Styptics in Degree of Efficacy.

† Aperients, open the obstructed Passages of the small Vessels and Glands, and, by that Means, promote a due Circulation of the contained Juices. Aperients then coincide with what we otherwise call Openers, and Deobstruents.

A. By their thick and ramous Parts, they connect and join together those that are more liquid and moist, and so bring them to a thicker Consistence.

Q. How do attenuating and inciding Medicines operate?

A. Because they cut and attenuate the thick and viscous Humours with their acute Points.

Q. How do Emplastics operate?

A. By their soft, flexible, and ramose Particles, they easily adhere to the Parts of the Body, and join them together, and shut up their Pores, and so, by hindering the Effluvia, they promote Suppuration.

Q. How do temperating Medicines act?

A. Temperating, otherwise call'd Epice-
raustics, are like Emplastics; and operate by sheathing and blunting with their soft and flexible Particles, others that are sharper and more acrid, or, if it is performed by their soft and flexible Particles, at least, they are of such a Nature, that they readily admit the Particles of any more acrid Humour into their Pores, destroy them, and carry them out of the Body; or they wear blunt, and dissolve other Particles by their Hardness, as Crabs Eyes, Coral, Shells, and many other harder Things, and Alcalies temperate Acids.

Q. How do Detergents act?

A. They abrade and carry off with their hard, rough, and sharp Particles, the Sordes

O o

they

292 *The Rudiments of Physick.*

they meet with in the Passages and Superfices of the Body.

Q. What are * Repellents?

A. They repel the Afflux of Humours, and lessen Swellings, by their Coldness and Astringence, hindering the Heat, and shutting the Pores and Passages of the Parts.

Q. How do Attrahents operate?

A. Attrahents, more properly Educents, to which Class belong Pyrotics, or Urents, and vesicating Medicines, of which I have before taken Notice: These Medicines, by their extraordinary Heat, and the Subtlety of their Particles, open the Pores of the Parts, and rarefy the contained Humours, so that
the

* Repellents, drive back a morbid Humour into the Mass of Blood, from which it was unduly secreted; and prevent such an Afflux of the Fluids to any particular Part, as might raise it into a Tumour, or drive them back, when collected: Therefore, as great Mischiefs has been done by them, it may not be improper to consider their Manner of Operation. A Medicine becomes Repellent, by consisting of such subtle Parts, as may transmit some of them through the Pores, and render the obstructed Matter more fluid, so that it comes more easily loosened, and falls again into the circulating Current. But, in this Case, there is great Hazard of such Things putting the obstructed Humour into a Ferment, and, instead of repelling, it is sooner turned into Pus. Some Things likewise answer this End, only by stimulating the Fibres of the tumefied Part, so as to give them sudden and forcible Twitches, whereby the Obstruction is loosened, and shook back into the resluent Current. Such Motion will be occasioned by the sudden Application of any Thing extremely cold, as common Water; but this Practice is very unsafe; because if the first Efforts which the Fibres are put upon, by these Means, do not succeed in breaking away the inclosed Matter, they will be strained, and not able afterwards to repeat their natural Vibrations; the Consequence of which, is weakening the Part, and rendering the Tumor more obstinate.

the Resistance being lessened, they move more freely, and are more readily propelled; sometimes they make the Part swell, and grow red; also sometimes, having raised many Humours and Vapours to the Cuticle, whose Parts are more dense than the Skin, when they cannot pass it, they raise it up in a Bladder, and thus they also often draw out their own aculeated Particles.

Q. How do Catheretics * operate?

A. Catheretics, and Psilotra, that take away Hair, operate by cutting and opening the Pores of the Part, and by attenuating, agitating, and insensibly dispersing the Humours contained in them.

Q. How do maturing Medicines act?

A. Maturing, or Medicines promoting Pus, operate because, by their moderate Warmth and Moisture, and Aptness to shut up the Pores of the Part, they stick to it, and hinder the Efflux of the Spirits, and thus, by encreasing the Warmth of the Part, they suppurate the extravasated Blood.

* Catheretics, are such Medicines as consume, and eat off fungous Flesh, growing in Wounds, Ulcers, &c.

C H A P. XXV.

Q. **H**OW do Stiptics act?
A. Stiptics, by their Astringion, Refrigeration, or Exsiccation, or their Fitness to stick to and close up, do contract the open Vessels, or lessen the vehement Motion of the Blood and Spirits: By this last Manner operate all Medicines thickening the Blood; Opiates and cold Water applied to the Nostrils, the Testicles, and other Parts.

Q. How do * Sarcotics, or Medicines generating Flesh, act?

A. They act by defending the Part, and by their moderate Warmth preserving the natural Heat thereof, and by taking away the Foulness from Wounds and Ulcers, they cause a proper Influx of the nutritive Humours into the Parts, and its Conversion into the same Substance.

Q. How do glutinating Medicines act?

A. Glutinating Medicines that are powerfully drying, are less detergent, but rather conglutinate the Lips of a fresh Wound by their Astringence: Also Vulneraries, so called, because they cure Wounds and Bruises, taken in Decoctions, Potions, or other Forms, attenuate the Blood with some of their Particles,

by

* Sarcotics, are Remedies proper to fill up Wounds, and Ulcers, with new Flesh; and are the same as Incarnatives.

by which Means it more easily enters the Part affected, and bring off its acrid Serum by the Kidnies, or some other Way; and by some other of their Particles they astringe, and partly deterge. Also cicatrising and epulotic Medicines that, by astringing, contracting, and drying an Ulcer, bring it to a Scar in proper Time. Lastly, Medicines generating Callosity, that, by astringing, and drying the Nourishment of the Bones, convert it into a callous Substance. Medicines taking away Scars, by mollifying a Scar in any Part, rectify it, by giving it more Warmth.

Q. How do Medicines act, that heal Burns?

A. They open the Pores of the burnt Parts, by their Warmth and Moisture, and draw out the serous and sharp Humours; or their Particles are of such a Form, that, being applied to a Burn, they hinder the more violent Motion of the Serum, now rendered acrid; or only consolidate the Part, by detarging, and drying it.

Opium to the Eyes.
Olive to the Hearing.

Astringents to the Joints.

Pneumonic to the Lungs.

Cardiac to the Heart.

Nephritic to the Kidnies.

Diuretic to the Bladder.

P. H. A. P.

Hepatic, Stomachic, &c. to the Liver, or from the

Stomach, to the Liver, or from the

Stomach, to the Liver, or from the

Stomach, to the Liver, or from the

Stomach, to the Liver, or from the

C H A P. XXVI.

Of Medicines that are appropriated to a particular Part and Disease, and how they act.

IT is certain there are some Medicines, that rather cure one Part, than another; for one, by a different Disposition of its Parts, may be admitted into the Pores of some Part, and not another; also one Medicine, by its greater Activity, may shew its Effect in some Part, and another may not.

In like Manner, there is no Doubt, but some Medicines are more fit to cure some Diseases; hence several Names of Medicines are derived, and some are call'd,

Cephalic, or appropriated to the Head.

Ophthalmic, to the Eyes.

Otic, to the Hearing.

Arthritic, to the Joints.

Pneumonic, to the Lungs.

Cardiac, to the Heart.

Nephritic, to the Kidnies.

Cystic, to the Bladder.

Hepatic, Stomachic, Uterine, or from the different Diseases they chiefly cure: As Alexipharmic, Scorbutic, Antiepileptic, Antiapoplectic, Antifebrile, &c.

But

But here it is to be observed, that these Medicines are not so different, as not to agree sometimes in their Effects; thus Cephalics, for the most Part, are Uterines, and Hysterics, and the Contrary; because hysterical Disorders are generally convulsive, and proceed from the Irregularity of the Spirits. Thus all Cardiacs, are Cephalics, because they help both the Heart and Brain; and the Contrary, because the Heart and Brain depend on each other's mutual Assistance. In the mean while, Cephalics act, by restoring the animal Spirits in the Brain, with their volatile Particles, or by rousing them, or by recalling them, when their Motions are too violently agitated, or by opening the Passages of the Nerves, when they are obstructed in the Brain.

Cardiacs act, by producing, with their volatile Particles, a brisker Rarefaction of the Blood in the Heart, and by raising the Spirits, as * precious Stones, Pearls, &c. for they correct the Acid, which too greatly inspissates the Blood, or thickens it, when it is too much fus'd, that it can scarce retain its Spirits.

Pneumonics act, by lubricating the Bronchia with their soft and mild Particles; with others, that are finer, and more inciding, they dissolve the Viscidities in them, and, by stimulating the interior Membrane, they irritate it to Contraction, and Excretion: But
P p they

* These must give Place to more efficacious Medicines used in the present Practice of Physick;

they not only arrive at the Bronchia by the Way of the Blood, but some small Part of them are carried to them directly by the bibulous Glands of the Asperia Arteria.

Nephritics *, and Cystics, besides Diuretics, and Lithontriptics (which I have mentioned before) agree with the Roughness of the Bladder, by their soft and gently deterging Particles; and are also good for the Heat and Acrimony of the Urine.

Stomachics act, by dissolving the Crudities of the Stomach with their warm and attenuating Particles, and by strengthening it with their Astringence, so that it more readily contracts and digests its Contents.

Hepatics, and Splenics, act, by readily penetrating the Vessels of the Liver, and Spleen, with their fine, inciding, and absterging Particles, by opening the Vessels in them, and
by

* There is so great Difference between Nephritics, Diuretics, &c. with Respect to the Principles, and Manner of Operation, that they require the most judicious Application, according to the particular Nature of different Cases: Thus if, to plethoric Patients labouring under the Stone, we should exhibit hot Substances, impregnated with a subtile Oil, before Venæ-Section, we should certainly injure the Patient, by bringing on an Inflammation of the Kidnies, and increase, rather than abate the Symptoms. On the Contrary, in moist, less delicate, and robust Patients, stimulating, and drastic Medicines, are of singular Use and Service. But the more safe and efficacious Medicines, for procuring a free Discharge of Urine, are not only all Kinds of fixed alkaline Salts, but particularly of those call'd Neutral; for they not only dissolve the tough and viscid Juices, which obstruct the urinary Ducts, but also, by a gentle Stimulus promote their Discharge.

The Rudiments of Physick. 299

By rectifying their Crudities, if they have any: And further, being impregnated with an alkaline Salt, they every where dissolve the Blood, and destroy the Acids in it.

Alexipharmics, cure the Plague, and other malignant Diseases, and act, by blunting and sheathing, or by expelling the sharp and corrosive Particles of the Venom, which coagulated, or too much dissolved the Blood, or corroded the solid Parts, or by fixing the volatile, and attenuating the glutinous Particles which oppress the Spirits, as either of these Qualities predominate: Whence this Species of Medicine must be either hot, cold, incrasating, or attenuating, &c. according to the Case.

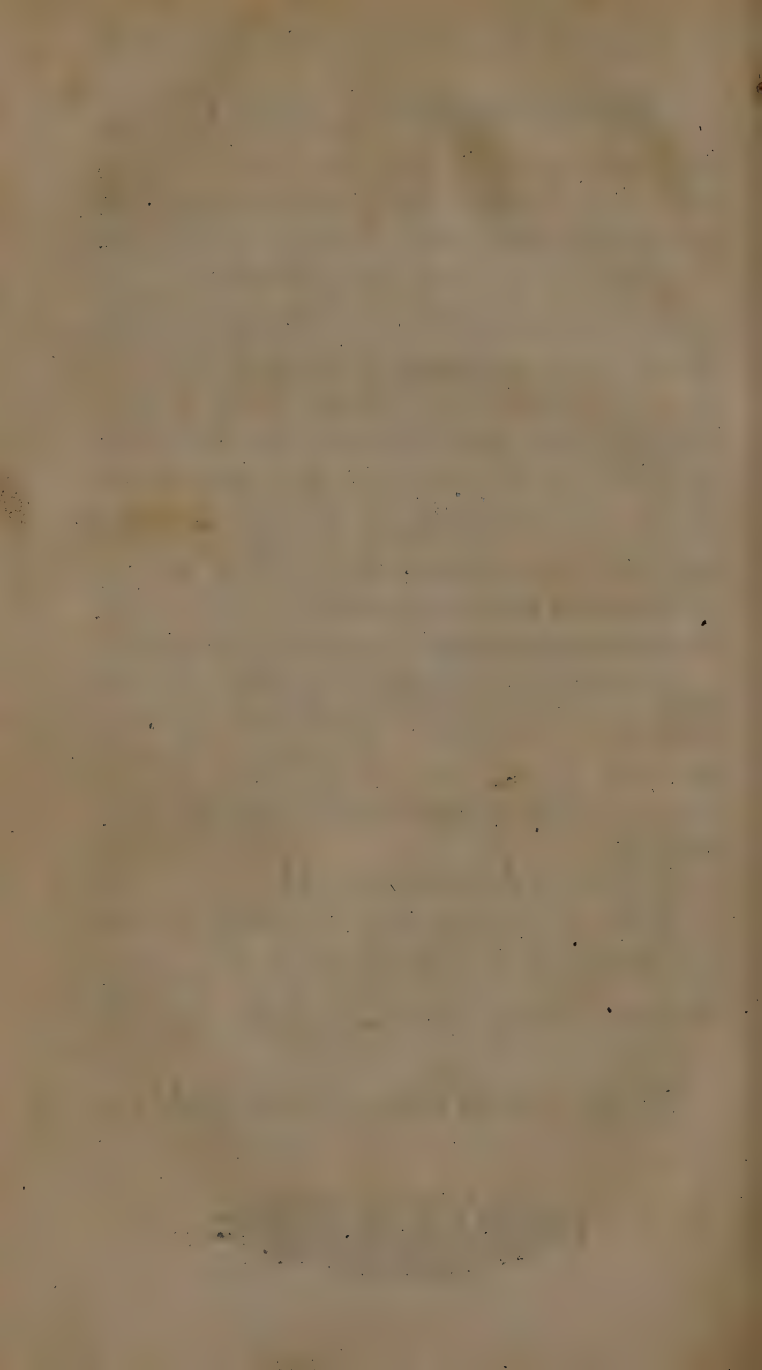
Antapoplectics act, by impressing a greater Motion on the Spirits in the Brain, by their Fineness and Volatility, opening the Pores of the Brain and Nerves, and by giving a Tension to the Fibres, they excite and strengthen the Brain.

Q. How do Antepileptics act?

A. By correcting the Acrimony of the Spirits, or the Matter vellicating the Origin of the Nerves in the Brain, or by reducing the Hurry of the Spirits to a calmer State.

The End of the Rudiments of Physick.







T H E

A P P E N D I X.

Observe, that in the former Part, the Doctor answers the Questions of the Student, but the Reverse in the *Appendix*.



A V I N G now finished the *Principles of Physick*, and considered them in the foregoing Method, it remains, that you should apply these Rules to the Cure of some particular Diseases, that I may be satisfied you have acquired a Knowledge in the Cure of some, and then I shall be sure you will succeed in the rest: You may begin with the * Apoplexy.

2. When

* The Apoplexy is a sudden Privation of all the sensible Motions of the Body, except the Heart and Lungs, attended with a great Depravation, or Suspension of the principal Faculties of the Soul. It differs from a Carus, Lethargy, and Coma, in Regard, in these three Distempers, the Stupor is not so profound, nor all Sensation quite destroyed. It differs from a Syncope, as,

Q. When do you say a Person hath an Apoplexy?

A. When a Person is suddenly deprived of the Use of all Sense, both external, and internal, and of all voluntary Motions, the Pulse still continuing strong, with a difficult Respiration, &c.

Q. What do you do in this Case?

A. That the Disease might not encrease, I would have immediate Recourse to the most powerful Medicines.

Q. Prescribe the necessary Forms, and give me a Reason why you have prescribed these, and not others.

A. I begin thus:

1. Let

in this, there is no sensible Pulse, whereas in an Apoplexy, the Pulse is perceptible almost till Death. It differs from an Epilepsy, in Regard all Motion is not abolished in that, as in this: And it differs from the Palsy, inasmuch as the Palsy is not attended with any Stupor, nor does it deprive the Patient of Sense and Perception.

It may be occasioned by an Interruption of the Passage of the Blood towards the Brain; or by any Thing that hinders the Influx of the animal Spirits into the Organs of Sense, and the Parts of voluntary Motion: Sometimes it is owing to a Redundance of Phlegm, and sometimes to a viscid Pituita, wherewith the Brain is oppressed, as is observable in Winter Apoplexies, and in those of old People. It sometimes also arises from an acid Humour, that coagulates the Blood; or too gross a Lymph, which stops up the Nerves; or a Plethora, which oppresses them; or Excesses within the Cranium, pressing on the Vessels; or a Polypus, blocking up the Carotids. In dissecting Persons dead hereof, extravasated Blood is usually found in one, or both Ventricles of the Brain. It is frequently preceded by a violent Pain in the Head, Loss of Sight, or Memory; sometimes by an universal Indolence; and sometimes with a Flux of pituitous Matter by the Nose and Mouth.

1. Let twelve Ounces of Blood, or more, be instantly taken away.

2. Take of the Infusion of Croc. Metal. one Ounce, Oxymel of Squills half an Ounce (or rather Vinegar of Squills) strong Cinnamon-Water three Drachms; mix it for a Vomit, to be taken with a proper Regimen.

3. After the Operation of the Vomit, let the following Bolus be taken every 6th Hour, repeating it four times.

Take of the Conserve of Rosemary half a Dram, compound Powder of Crabs Claws one Scruple, Russia Castor seven Grains, volatile Salt of Hartshorn five Grains (the Quantity of Salt of Hartshorn may be increased according to the Violence of the Symptoms) compound Syrup of Pionies, enough to make it into a Bolus, drinking after it four or five Spoonfuls of the following Julep.

4. Take Waters of Rue, Black Cherries, Milk-Water, Alexiterial, compound Piony, and compound Briony Water, of each an Ounce and Half; Syrup of Pionies, enough to make it a Julep.

5. Let a large and sharp Epispastic be applied between the Shoulders.

6. Take volatile Salts of Hartshorn two Drachms and Half, to be put into a long neck'd Bottle, and let the Patient frequently smell to it, when faint.

2. What

* Sharp Glysters, with Tincture of Hellebore, &c. are here necessary; and also Sternutatories must be frequently used.

Q. What do you observe in the Cure of this Disease?

A. I observe in this, as in all other Diseases, that there can no general Method of Cure be given, but it must be varied according to the different Circumstances of the Distemper. Read the *Principles of Physick*, p. 177, and 207.

Q. What is the Effect of Venæ-Section, of the Vomit, and of the Blister, that you have prescribed.

A. By these Evacuations, the Pressure upon the Vessels of the Brain is diminished, and a Derivation of the Humours is also thereby effected: The Physician ought to rely upon universal Evacuations. In curing this Disease, Vid. the *Principles of Physick*, p. 157, 241, 243, 253, 257, 259, 260, 261, 263, 265.

Q. How many are the Causes of an Apoplexy?

A. They are various, and divided into several Classes: Those of the first Class are, a large Head; a short Neck; the Body corpulent, and fat; a plethoric Habit; and a Redundance of pituitous Humours.

Of the second Class are, whatever Causes produce such a Change in the Blood, the Lymph, and the nervous Fluid, as to prevent their free Circulation in the Brain.

Of the third Class are, whatever Causes produce such a Pressure upon the Arteries, and nervous Vessels of the Brain, that the Blood
and

APPENDIX.

and Spirits cannot pass freely through them; this is commonly the Effect of luxurious Eating and Drinking, and of excessive Heat and Motion.

The Violence of the Fit is caused by the Age, Constitution, and Make of the Patient, as well as by the Vehemence of the Symptoms, such as the intire Deprivation of the Senses, and Motion; the Respiration strong, and deep, accompany'd with a Stertor, and a great Quantity of viscid Froth about the Mouth.

On the Contrary, the Slightness of the Disease, and the Probability of its Cure, is discovered by the Mildness of the Symptoms, and the Absence of the Causes above described.

The First Evening's Prescription.

2. **W**HAT did you do in the Evening?
A. I prescribed the following Medicines.

Take volatile Salt of Hartshorn half a Drachm, divide it into two Parts, and take one immediately, the other about Midnight.

Take the Cephalic Plaister (made with a double Quantity of Euphorbium) three Parts; of Gum Galbanum strain'd one Part; of the Oil of Amber, eight Drops. Make it
Q q into

into Plaisters, for the Feet, to be applied at Night. Continue the Use of the Bolus, and Cephalic Julep. Prepare Epispastics, to be applied to the Inside of the Arms, and Legs.

Take of the Countess of *Warwick's* Powder two Scruples, of Castor half a Scruple, of Salt of Amber four Grains, Syrup of Buckthorn, enough to make it a cathartic Bolus, to be had ready against To-morrow Morning.

The first Prescription of the Second Day.

2. **W**HAT did you do, the next Day, with your apoplectic Patient?

A. I found the Symptoms something abated; therefore I proceeded in this Manner.

Take of the Decoction for Glysters twelve Ounces, of Lenitive Electuary half an Ounce, of Hiera Picra one Scruple, of Oil of Rue two Ounces: Make a Glyster, to be injected at Four in the Afternoon. Repeat the Medicines prescribed above.

Take Spirit of Sal Ammoniac, Spirit of Castor, of each two Drachms, Oil of Amber thirty Drops; take thirty, or forty Drops, in the Julep, when faint.

The

The Second Prescription of the Second Day.

2. **H**OW did you proceed in the Evening?
A. I prescribed in the following Manner.

Take of Diagridium twelve Grains, of Castor half a Scruple, of Salt of Amber three Grains, Syrup of Buckthorn enough to make it a Bole; to be taken directly, or early Tomorrow Morning, unless there be a Stool before; proceed in the Use of the cephalic Spirit, taking fifteen Drops of it, in three or four Spoonfuls of the Julep, every 6th Hour.

The first Prescription of the third Day.

2. **W**HAT did you prescribe the third Day?

A. Take of the carminative Decoction twelve Ounces, of the Infusion of Crocus Metallorum one Ounce and a Half, of Oil of Rue two Ounces, of Species of Hiera Picra one Drachm; make it a Glyster, to be given at four o'Clock in the Afternoon.

In the mean Time continue the Use of the cardiac Bole, to be taken, as before, with the cephalic Julep every 6th Hour: In the Inter-

Q q 2

vals

vals of taking the Bole, fifteen Grains of volatile Salt of Hartshorn may be given also every 6th Hour, and continued three times.

I proceeded in this Manner, changing the Medicines as the Case required, till my Patient recovered his Health.

By these Means the extravasated Lymph was evacuated by frequent, and very powerful hydragogue Purges, and also by other Evacuations, chiefly very large Blisters, kept running a long Time.

To prevent a Relapse, I prescribed strengthening Medicines, and forbid the Use of strong Liquors, but ordered a light, and nourishing Diet; and thus my apoplectic Patient was restored to his former Health.

*Of the * Epilepsy.*

2. **WHAT** are the Symptoms of an Epilepsy?

A. The Patient falls down suddenly, losing all his Senses, both external, and internal; all

* The Epilepsy, as defined by *Boerhaave*, is a Convulsion of the whole Body, or some of its Parts; returning from Time to Time in Fits, or Paroxysms: The Patient seized herewith, falls instantly down, grinding his Teeth, and foaming at the Mouth; he frequently shakes his Head, Arms, Legs, &c. either becoming rigid, or variously distorted; and, as all the Parts are in a violent Contraction, there is frequently an involuntary Flux of Urine, Seed, &c. The Cause of this Disease, this great Physician

all the Muscles, or some of them, receive a violent, involuntary, and reciprocal Concussion, which alternately ceases, and is renewed.

This Disease appears in such various Shapes, that it has often been ascribed to Witchcraft, to the divine Displeasure, and the like supernatural Causes: For there is no Posture, however distorted, in which the Patient does not sometimes appear.

Nevertheless, as all the various Effects of this Disease consist in the Change of Motion in some of the muscular Parts, so they are produced by as many various Contractions of the Muscles; by the various Influx of the nervous Fluid compressing the common Sensorium, and by various Causes in the medullary Substance of the Brain; all these Causes are best known by an historical Account of them, which, as I study Brevity, I am obliged to omit.

The * Extract of Mandrake-Root, is the famous Antepileptic Medicine of *Knifelius*;
at

sician attributes to too much Action on the motory Nerves, and none on the sensitive ones. Some account for it from the Abundance of sharp Humours mixing with the animal Spirits, giving them preternatural, and irregular Motions, and Directions; whence arises its Distinction from a Syncope, and Apoplexy, which take away all Motion, as well as Sense.

* Native Cinnabar is greatly celebrated for the Cure of this Disease, and may be taken from four Grains to a Scruple. *Cheyne* says, a Milk Diet alone has cured an inveterate Epilepsy; and I myself know an Instance of a Servant to a noble Lord, cured by leaving off strong and fermented Liquors, and drinking only Water. *Dr. Colbatch* says, Mistletoe cures an Epilepsy, as sure as the Bark an intermitting Fever.

at least, it is a very necessary Ingredient therein.

Take of the Powder ad Guttetam six Grains, of Confection of Hyacinth seven Grains, of the Confection of Alkermes ten Grains, Syrup of Saffron half a Scruple ; make a Bolus, to be repeated every three Hours, to be given in a Spoonful of the following Julep, drinking three Spoonfuls after it.

Take Black-Cherry-Water four Ounces, compound Piony, and distilled Treacle-Water, of each half an Ounce, of prepared Pearls half a Drachm, of Loaf-Sugar three Drachms ; make a Julep.

Let a Plaister be applied to the Navel, made of an Ounce of Gum Caranna, of Oil of Mace, by Expression, one Drachm, and four Drops of the Oil of Juniper Berries. The Patient was a Child eight Months old.

These Medicines blunt, temper, and break the Acids, and dissolve the obstructing Matter, without heating the Body.

Of

Of a * Nausea.

Q. WHAT is a Nausea?

A. It is a Propensity to vomit, without Effect.

Q. How is it stopp'd?

A. By the Use of Acids, or by drinking warm Water, &c.

Take Rose-Water four Ounces, Salt of Wormwood one Scruple, Syrup of Lemons one Ounce; mix it for two Doses, and you will see the Effect. *Vid.* p. 140, &c. of Meat and Drink.

A gentle Purge may be given, the Stomach being already strengthened with the Roughness of the Acids; but, if it does not yield to these Medicines, I prescribe a Vomit. If it arises from a viscid Matter fluctuating in, and vellicating the Stomach, it is removed by diluting, inciding, and attenuating Medicines. If it proceeds from an Inflammation of the adjacent

* Nausea, and Vomiting, only differ from one another, as more, or less violent: The Nausea is properly the Effort the Stomach makes to vomit, which has not always the Effect; and is anatomically defined to be a retrograde, spasmodic Motion of the muscular Fibres of the *Æsophagus*, Stomach, and Intestines, attended with Convulsions of the Abdominal Muscles, and the *Septum Transversum*. The usual Causes are hard Drinking, Fevers, Consumptions, Laxness of the Stomach, occasioned by Tea, &c. Also Narcotics, as Tobacco, Passions of the Mind, Suppression of Evacuations, inducing a Plethora, foul Stomach, tenacious Humours lodged therein, &c.

adjacent Parts, it will not cease, till the Cause is removed.

Q. What do you infer from hence?

A. From these Considerations, we see why Persons, in acute Diseases, attended with a Nausea, receive so much Benefit from a Purge, or an Emetic, in the Beginning of the Disease; and further we see why, in acute Fevers, the Patient is desirous of Water, Acids, Summer-Fruits, and cooling Substances.

Q. Why have Medicines no Effect, unless the Nausea is subdued?

A. Such Disorders are sometimes cured by sudden, unusual, and surprizing Appetite. *Vid.* p. 267. of Purgatives.

Take Tamarinds one Ounce, Leaves of Senna three Drams, Anniseeds, and Fennelseeds, of each one Drachm, Cinnamon half a Drachm; boil these gently in Spring-Water, and, being strained off, to three Ounces, add six Drachms of Calabrian Manna cleansed, and a little Juice of Lemons; mix it for a Purge. Or,

Take of Manna one Ounce and Half, of Oil of sweet Almonds one Ounce, of Powder of Jalap one Scruple; these being taken in Chicken-Broth, do purge extremely well.

Going to Rest.

Take Confection of *Fracastorius* two Scruples, of the sharpest Vinegar half an Ounce, Pepper-

Pepper-Mint-Water one Ounce; make a Draught, to be taken going into Bed.

*Of * Obstructions.*

Q. WHAT is an Obstruction?

A. It is a Stoppage of some Tube, or Vessel, that prevents the Passage of the vital Fluids, either sound, or morbid, arising from the Excess of the Matter to be circulated, above the Capacity of the circulating Vessel.

Q. What Method of Cure does it require?

A. It requires stimulating, and strengthening Medicines, and such as enliven the Motion of the animal Spirits.

Moreover, as the Thickness and Lensor of the Blood may arise from sundry and different Causes, so it requires various Medicines, and different Methods of Cure, according to the different Circumstances that happen; and these different Causes being discover'd, will direct the proper Means of Relief.

Q. What is effected by Venæ-Section in Obstructions?

R r A. It

* Obstructions, taken in the general Sense of the Word, include almost all Diseases. The learned *Boerhaave* has treated very largely of them; and in this, as in all his Writings, has treated it with the greatest Accuracy and Judgment; to whom I refer my Readers.

A. It moderates the Causes of the Distention.

Q. What is effected by drinking Water, and other small Liquors, warm?

A. They dilute, either taken as Drink, or injected, or otherwise applied.

Q. What is the Effect of saponaceous Medicines in Obstructions?

A. Soaps, being composed of Oil, and an Alkali, are attenuating.

Q. But when a Fluid is driven into an improper Place, which is not penetrable, and from hence creates Obstructions, are not many Diseases, and some malignant, produced hereby? And does not this Evil deserve to be attentively considered?

A. Most certainly; we know this is the Case, if we know, 1. That the Causes (which are generally remarkable enough) have preceded. 2. That the Contrary to these have succeeded. 3. Where we plainly discern its Effects.

Q. How is the Obstruction cured?

A. 1. By driving back the impacted Matter, with a retrograde Motion, into the larger Vessels. 2. By resolving it. 3. By relaxing the Vessels. 4. By Suppuration: Which is done by evacuating the Humour, which presses the impacted Matter, by a speedy and plentiful Venæ-Section, whereby it is forced back by the Power of the contracting Vessel. A prudent Physician will easily see how to add

add many Things more, upon a due Consideration of the Causes.

*Of the * Diseases of Virgins.*

2. **W**HAT Remedies do the Diseases of Virgins require?

A. There are some Diseases peculiar to Virgins; and, that I may answer methodically,

1. When

* An Obstruction of the Menfes, or Catamenia, being the efficient Cause of most Disorders attending Virgins, it might not be here improper to give an Explanation of the various Hypotheses which have been framed, of this most curious, and difficult Phænomenon, in the whole human Body. It is generally agreed, that the Necessity Women are under, for some extraordinary Supply, to support them during the Time of Gestation, was the final Reason why this Redundance at other Times was given them. This is agreed on by all; but this is all they agree in. Some, not content with this alone, will have the menstruous Blood offend in Quality, more than in Quantity; which they argue, from the Pain it gives many Women in the Evacuation. They add, that its Malignity is so great, that it excoiates the Parts of Men by mere Contact; that a little of the Blood, dropped on any Vegetable, renders it sterile; that if a Dog tastes it, he runs mad, or grows epileptic. These Fables, with many more of the same Kind, Dr. Drake rejects, as too ridiculous to need Refutation. Others ascribe this Effect to an imaginary Dominion of the Moon, over the Bodies of Women: This was formerly the prevailing Opinion; though the least Reflection, would have shewn the Weakness of it! There are two other Opinions, which carry with them great Probability, and are argued with a great deal of Strength and Reason: The former, is that of Dr. Friend, who maintains this Flux to be the Result of a mere Plethora; and to be evacuated only for Relief

1. When a Woman arrives at her full Growth, and is in good Health, more Blood is

Relief against the Quantity. Dr. *Friend*, who has maintained the Cause of a Plethora, with the greatest Strength and Clearness, supposes this Plethora arises from a Coacervation, in the Blood Vessels, of a Superfluity of Aliment; which, he thinks, remains over and above what is expended by the ordinary Ways; and that Women have this Plethora, and not Men, because their Bodies are more humid, and their Blood Vessels, Lymphatics, Membranes, and Fibres, much laxer, whence all their Cavities, Cells, &c. are more easily replenished, and the Humours aggregated in them. These Things concurring, are the Occasion Women do not perspire sufficiently to carry off the superfluous alimentary Parts, till it be accumulated in such Quantity, as to distend the Vessels, and force its Way through the capillary Arteries of the Uterus. It is supposed to happen to Women, more than the Females of other Species, because of the erect Posture of the former; and the Vagina, and other Canals, being perpendicular to the Horizon; so that the Pressure of the Blood is directed towards their Orifices: Whereas, in Brutes, they are parallel to the Horizon, and the Pressure wholly on the Sides of the Vessels. The Discharge (he thinks) happens in this Part, rather than any other, being more favoured by the Structure of the Vessels; the Arteries being very numerous, and the Veins sinuous and winding, and therefore more apt to retard the Impetus of the Blood; and, consequently, in a Plethora, to occasion a Rupture of the Extremities of the Vessels, which may last till, by a sufficient Discharge, the Vessels are eased of their Over-load.

This is the Substance of Dr. *Friend*'s Theory, from whence he very mechanically, and philosophically, accounts for the Symptoms. *Boerhaave* seems to join with him in this Opinion, in an anatomical Account of the Structure of these Parts.

But all this is opposed by Dr. *Drake*, Dr. *Charleton*, *De Graaf*, and others, who maintain, there is no such Repletion; or, at least, that it is not necessary to Menstruation. The first argues, that if the Menstrues were owing to a Plethora so accumulated, the Symptoms would arise gradually, and the Heaviness, Stiffness, and Inactivity (necessary Symptoms of a Plethora) would be felt long before the Period was completed, and Women would begin to be heavy, and indisposed, soon after the Evacuation, and the Symptoms daily increase, which is contrary to all Experience.

is generated, than the Vessels can contain; wherefore it is discharged every Month *, by the uterine Arteries.

2. If

ence; many Women, who have them regularly, having no Warning, nor other Rule to prevent an indecent Surprise, than the Measure of Time; which is no ways consistent with the Notice a plethoric Body would give.

The two last give into the Doctrine of Fermentation, and maintain the Evacuation of Blood in those Parts, to be the Effect of an Effervescence, or Ebullition of the Blood.

Dr. *Drake* improves on this Doctrine of a Ferment, and contends, not only that it is necessary there should be a Ferment, but a Receptacle also for this Ferment. He goes farther still, and pretends to ascertain the Place, &c. both of the one, and the other, making the Gall Bladder to be the Receptacle, and the Bile the Ferment: This Liquor, he thinks well adapted to raise a Fermentation in the Blood, when discharged into it in any Quantity; and, as it is contained in a Receptacle, that does not admit of a continual Issue, may be there reserved till, in a certain Period of Time, the Bladder becoming turgid and full, through the Compression of the incumbent Viscera, it emits the Gall, which, by the Way of the Lacteals insinuating itself into the Blood, may raise that Effervescence, which occasions the Aperture of the Uterine Arteries. To confirm this, he alledges, that Persons of a bilious Constitution, have the Menstrues either more plentifully, or more frequently, than others; and that Distempers, manifestly bilious, are attended with Symptoms resembling those of Women labouring under difficult Menstruation. If it be objected, that, on this Plan, Men should have Menstrues, as well as Women; he answers, that Men do not abound in Bile, so much as Women, the Pores of the former, being more open, and carries off more of the serous Parts of the Blood, which is the Vehicle of all the other Humours; and, consequently, a greater Part of each is discharged through them, than in Women; wherein the Superfluity must either continue to circulate with the Blood, or be gathered in proper Receptacles, which is the Case in the Bile. This is the Substance of what is argued against Dr. *Friend's* Theory; which, it must be owned, notwithstanding these Objections, is still the most rational, and consistent, that has yet been advanced.

* Whether it may be ascribed to Luxury, or whatever other Causes, this Evacuation often appears at fourteen, and sometimes sooner, in the present Age.

2. If this redundant Blood is retained, it occasions a Plethora, a Heaviness, a Sense of Weight, Paleness, a Pain of the Loins, and Groin, and a Depravation of almost all the natural, vital, and animal Functions, which may easily be deduced from the great Pressure of the Vessels, by the stagnating Blood.

The same Blood, thus accumulated, is often evacuated by uncommon Passages; for Physicians have seen it discharged from the Eyes, the Ears, the Nostrils, the Gums, the salival Ducts, from the *Æsophagus*, from the Breasts, from the Skin, also by Stool, and Urine, and from Wounds and Ulcers.

4. Or the accumulated Blood often injures all the Viscera; and, partly by its Putrefaction, and partly by the Injury it does to the Vessels, produces an infinite Number of Diseases.

5. This Disease of Virgins is known, 1. From the Age of the Patient. 2. From the Increase of the Body, being now full grown. 3. From the Plethora. And, 4th, From the subsequent Signs of the Disease.

6. The Cure requires various Remedies, according to the various Causes of the Disease.

7. Amongst these Causes, the Straightness of the Pudenda requires the Hand of a Surgeon, with a fit Instrument, to make a proper Incision, sufficient to discharge the Blood.

But when this Disease proceeds from the Stagnation of the Blood, its due Fluidity may be

be restored, 1. By Fomentations and Frictions of the Feet. 2. By opening a Vein in the Foot. 3. By uterine Purgatives. 4. By Emmenagogues. 5. By Plaisters, Fomentations, and Liniments. 6. By strengthening the Vessels, weakened by the Plethora, with chalybeate and astringent Medicines.

When the Source of the Disease is remov'd, all the Symptoms generally disappear, or are cured like the Disease which they most resemble.

*Of a * Diarrhea.*

2. **W**HAT do you prescribe in a Diarrhea?

A. Take Mastich three Drachms, Mace one Ounce; boil it in half a Pint of red Wine, in a close

* Diarrhea's are of diverse Kinds, according to the Diversity of the Excrements; some being bilious, some serous, some pituitous, and some purulent. There are also Diarrhea's arising from unwholsome Foods, and Sroppage of the other Excretions, particularly Perspiration. It is a standing Observation, that such as perspire but little, are subject to a Diarrhea; and, on the Contrary, People who perspire much, are commonly bound. In the Cure of Diarrhea's, from whatever Cause they arise, the Stomach must be corroborated, and Sudorifics mix'd with Absorbents. The Patient to drink sparingly. In those arising from sharp, fermenting Juices in the Primæ Viæ, the first Indication is to discharge the stimulating Matter, which may be effected by a Dose or two of Rhubarb. If from suppressed Perspiration, the Stools are thin, and the Patient feverish, first bleed,

a close Vessel, and add to it, when strain'd off, one Ounce of Cinnamon-Water, and a little Juice of Quinces: This is a Stomachic Decoction for a Looseness in Children of two Years old.

Take of the Species of Hyacinth, or Species *Fracastorius*, half a Drachm, of Pearls prepared one Scruple; make it into eight Powders, one to be taken every sixth Hour, drinking after it a little Draught of the following Julep.

Take Waters of Balm, small Cinnamon, and Black Cherries, of each one Ounce and Half, compound Piony-Water one Drachm, Cardiac-Water half an Ounce, prepared Pearls two Scruples, white Sugar-Candy three Drachms; mix it for a Julep, and give two Spoonfuls in the Intervals.

Take of the greater Comfrey-Root two Ounces, of Red Roses two Handfuls; boil them in a sufficient Quantity of Milk to one Quart; of the strained Liquor, take four Ounces; to which add the Yolk of one Egg, of the Confection of *Fracastorius* two Drachms; mix

bleed, then give an Emetic; afterwards, Rhubarb; and, last of all, Astringents. A bilious Diarrhea, ought not to be too suddenly stopped, but the Humours are to be corrected gradually: Glysters are likewise often serviceable. An obstinate Diarrhea, is to be cured by a Course of Vomits, of Ipecacoanha. An habitual one, is greatly relieved by wearing a Flannel Shirt, and keeping the Body warm, as Dr. *Wainwright* observes, in treating of the various Causes which may occasion an habitual Diarrhea.

mix it for a Glyster, to be given at Four in the Afternoon.

Lastly, Take Wormwood, and Camomile-Flowers, of each two Handfuls, of Cinnamon, Cloves, and Nutmegs, of each half an Ounce; infuse them in a Quart of the best Spirits of Wine; when strained off, and warmed, let a Flannel Cloth be dipp'd in a Part of it, and applied warm to the Child's Belly. Or,

Take of the Confection of *Fracastorius* two Drachms, of toasted Rhubarb two Scruples, of Nutmeg half a Scruple, of Crabs-Eyes one Scruple, of the Syrup of Quinces, enough to make an Electuary; to be taken occasionally.

Here, if the Disorder continues, repeat the same Medicines as in the Beginning of the Cure.

*Of the * Dropsy.*

2. **WHAT** is a Dropsy?

A. When the aqueous Serum bursts its Vessels, and is lodged in the Cavities of the Body, or by stagnating in any Part,
S s gives

* There are three Species of Dropsy, the Leucophlegmatia, or Anasarca, the Tympany, and Ascites: An Excess of Serosities is common to them all; which, being collected, form a Swelling, either over the whole Body, as in the Leucophlegmatia,

gives too great a Distention to the Vessels, it is called a Dropsy.

Q. What is a Hydrocephalus?

A. An Hydrocephalus, is a Collection of Water, either between the external Integuments,

tia, or in the Belly, proceeding from the Wind inclosed, as in the Tympany; in which there is generally found some Share of Water, likewise formed perhaps from the Condensation of the confined Vapour, or the Belly is sometimes so filled, that the Fluctuation of the Water may be easily perceived upon moving the Body, as in the Ascites. The Seat of the Leucophlegmatia is in that Membrane, which Anatomists call the Adipose, or rather the reticular or cellular Membrane, and which lies between all the Membranes of the Body and the Muscles,

The Tympany is of more Sorts than one: Sometimes the confined Vapour bloats up the Abdomen, which gives a hollow Sound upon being struck, and that Vapour is an Exhalation from some mortified Viscus; and therefore, when let out, it is extremely foetid. But yet it sometimes happens, without any Putrefaction, that an elastic Air engendered in the Abdomen, and not finding any Vent, pushes forwards and bloats up the Integuments by its expansive Force; and this is not pent up in the Cavity of the Belly, but in the very Intestines; which it stretches to such a Pitch, as to destroy their contractile Power; and then their Capacity is sometimes widened to an almost immense Degree.

The Ascites, or third Species of Dropsy, is formed three different Ways: For sometimes the Water is extravasated between the Tendons of the transverse Muscles of the Abdomen and Peritonæum, and by separating them forms a Tumor; at other Times the Serosities getting in between the Duplicature of the Peritonæum forces them asunder, and forms to itself a large Receptacle: But most commonly the Water is collected and stagnates in the wide Cavity of the Abdomen itself. See Cheselden's Anatomy, Book 3. Chap. 4.

But there is no Species of Dropsy worse than that of the Ovaria in Women. For these Organs first grow schirrous, then they are inflamed, and at length gangrened; they likewise swell to a vast Size, being gradually stretched by the Juices issuing out of their bursted Lymphaticks, which are very numerous, hence this Disease

ments, between these and the Cranium, or between the Cranium, and the Membranes of the Brain ; between these Membranes and their

Disease is seldom cured. These are the chief Ways of forming Collections of Water in the Belly, &c. but it is Time to come to the Cure of these Dropsies.

In the Leucophlegmatia, an Incision ought to be made in the inside of the Leg, two Fingers breadth above the Ankle, as far in as the cellular Membrane, and no farther, in order to serve as a Drain for the Water, which should run for some Days. During this Time let the Leg be fomented with a Decoction of emollient and warm Herbs, with an addition of Camphorated Spirits ; which Method has been found serviceable not only in this Species of the Dropsy, but even in the Ascites itself ; nay, in some Cases it has proved an absolute Cure, by draining off an incredible Quantity of Water for many Days together. But Care must be taken, not only in this particular Incision, but in all others that are made in any Part of the Body for drawing off the Waters, not to over-exhaust the Patient's Strength ; which is as much affected by this Evacuation, as if the same Quantity of Blood were drawn : Wherefore the Patient is to be supported by all possible Means, lest what was intended for his Cure, may hasten his Death. And yet it is astonishing, how great a Quantity of Water, drawn off in this Manner, Hydropicks sometimes bear to lose with Ease and Benefit. After the Incision is made, and warm Fomentations applied to the Part, let a strong Infusion of bitter Herbs, as Roman Wormwood, Centauri Gentian Root, the lesser Cardamom Seeds, with an Addition of Chalybeat Wine, be taken twice a Day, and the following,

Take Oxym, Scyllit. half a Drachm, Aq. Cinnamom. S. one Ounce, Sp. Lav. C. Syr. Aurant. ana one Drachm, m. f. Haustus.

Let proper Catharticks be given as soon as the Strength will bear it ; and indeed this Disease requires powerful Catharticks, and a frequent Repetition of them ; the chief of which are Elaterium, Calomel, and Jalap.

Order brings me now to the Tympany : And first, that Species, which, as I said above, proceeds from a Mortification in the Bowels, is absolutely incurable : But that which is occasioned by Air engendered and pent up in the very Intestines, is to be treated with moderate Cathartics frequently given, and Carminatives,

their Duplicatures; between these and the Brain; between the Foldings of the Brain, and also in its Cavities; yet, without producing instant Death.

2. Is

to expel the Wind interposed; together with Diet of very easy Digestion: Likewise bodily Exercise ought not to be neglected; and it will be of Use to throw up large Glysters of warm Water; and also what *Celsus* advises, to make Ulcers in several Parts of the Belly with a red hot Iron, and keep them running a good while. But if this Operation should appear cruel, it will be proper to lay Blisters on the Abdomen, and repeat them now and then.

The Ascites is always a dreadful Disease, whether its Seat be on the outside the Peritonæum, or within it, or in the Cavity of the Abdomen. Now it is extremely material in this Case to consider what Evacuations the Patient is capable of bearing; For when he is weak, violent Purgings is very prejudicial; and the more the Serosities are drained out of the Intestines, the greater Quantity of them flows into the Belly. As soon as the Physician observes this to happen, he ought to desist, and try to carry off the redundant Water by the Urinary Passages. But all Diureticks, even such as are esteemed the most powerful, are of uncertain Effect in these Cases: For those which answer in one Patient, fail in another; wherefore various Sorts are to be tried. But, generally speaking, those, into which Squills enter, are the most Efficacious. Of these the chief are, the Draught with Oxy-mel above described, or the fresh Root itself given in a small Quantity, as in the following Bole; Rad. Scyll. recent. fix Grains, Pulv. Ari C. half a Scruple, Z. Z. pulvers. five Grains, Syr. Aurant. q. s. f. Bolus quotidie mane sumend. Or, Succ. Limon fix Drachms, Sal. Absynth. half a Drachm, Aqua Cinnamom S. one Ounce and Half, Acet. Scyllit Syr. Aurant. ana one Drachm, Aqua menth Pip. Spt. half an Ounce, m. f. Haustus.

An Infusion of Broom Ashes is also beneficially ordered by Physicians, on Account of its Diuretic Quality; and if it be mixed with Wine, it will often make a good common Drink for the Patient.

The following has likewise been found very efficacious;

Take Succ. Coch. Hortens. half a Pound, Vin. Alb. montan. one Pint and half, Infund. frigide hor. 24 et filtra.

Take

Q. Is not the last Species incurable?

A. It is incurable; but the others may be cured by gentle Cauteries, by the Use of the Trevine, or Puncture, prudently and slowly evacuating

Take Sapon. Venet. G. Ammon. ana a Drachm and half, Millep. Pttæ. one Drachm, Rad. Scyll. Pulv. one Drachm, Ol. Junip. q. s. f. massa. Pilul. No. xii. e singul. Drachm. de quo capiat iv. mane et vesperi superbibend. six Ounces, Vini præscript.

A strong Decoction of Broom Tops, given with a Spoonful of whole Mustard Seed, long continued, has been known to effect a Cure, without any Return of the Disease.

It will perhaps seem an uncommon, and even dangerous Practice, to order Narcotics in this Disease: But they are sometimes so useful, that they may be placed among Diuretics. For in Case of great Pain they often promote a Discharge of Urine; which Effect they produce purely by relaxing the Fibres of the Renal Ducts, which are always constricted by Pain. I have frequently ordered the following with good Effect.

Take Menth. Piper, S. Cinnamon. S. ana six Drachms, Cinnaom Spt. two Drachms, Lixiv Tart. half a Drachm, Tinctur. Thebaic. gut 40. Syr. Alth. one Drachm, m. f. Haustus.

Having hitherto treated of Things proper to be taken in this Disease, it might not be amiss to say a Word or two on a very different Method of Cure, which is, by abstaining from all Kinds of Drink for a long Time: For even this Method has had its Abettors among the Faculty. But certainly it is very difficult to be strictly pursued; nevertheless I have known two Persons labouring under a very severe Ascites, who had Resolution enough strictly to practise this Self denying Method, and were both perfectly cured. Their Way of asswaging their Thirst was, by washing their Mouth and Throat with the Juice of four Apples, and Lemons, and now and then swallowing a very small Quantity of it.

But if the Belly cannot be drained of its Load of Water, either by Incisions made in the Legs, or by any other Helps above mentioned, there will be a Necessity of taking a shorter Course of relieving the Patient, I mean by Tapping. I know that Physicians are often averse to this Operation, grounded on the following Reason; *'Tis in vain, say they, to let out the Water, since the internal Parts are injured: Moreover, if it be let out by Parts at*
different

evacuating the Humour, exhibiting at the same Time, Hydragogues and Corroboratives internally; or they are removed by external Dilcutients.

2. What

different Times, the Belly soon fills again; but if it be drawn off all at once, the Patient dies immediately. It is most certain, when the Bowels are mortified the Case is past Hopes; that letting the Water out by Parts is of no Service, and drawing it off all at once is commonly pernicious. "Wherefore, says Dr. Mead, in the Year 1705, I began to investigate the Cause of so great an Evil, in order to guard against it; and, if I am not mistaken, (says he) it is as follows: By the great Distension of the Abdomen from the inclosed Water, the Diaphragm is thrust up too high; the Muscles of the Belly are stretched, the Blood flows with greater Freedom through the upper Blood Vessels than through the lower; and the Water, by its Pressure occasions some new Disposition of the adjacent Parts: Whence, upon letting out all the Water at once, the Diaphragm immediately moves lower down than in its natural State it usually does; the Blood rushes with unusual Impetuosity into the lower or descending Vessels, and by the Removal of the Pressure, the Fibres suddenly lose the Extension which they had acquired, and the Heat, which the inclosed Water had given them: Hence arises fainting, and a Swooning; which returning often, and with increased Violence, throws the Patient into cold Sweats, and soon carries him off. The best Way to prevent such fatal Consequences, seem to be, to press the Belly hard, with both Hands, from the upper Part downward, while the Water is issuing; and after it all comes away, to swathe the Belly tight with a Bandage. When all the Water is drawn off, a Piece of Flannel, dipped in Spirits of Wine, is to be laid on the Abdomen, and then the Bandage rolled tight all over it." Now, from that Time, not only our own, but also foreign Physicians have followed this Method, which has succeeded to their Wishes; tho' in Cases of diseased Livers, Abscesses of the Stomach, and bad Habits of Body, there is little or no Reason to hope that it will be attended with Success: Wherefore some Precautions are always necessary to be used before attempting it; the most material of which are laid down by those ingenious Surgeons Mr. Cheselden, and Mr. Sharp.

But

Q. What do you remark in a Dropsy of the Thorax?

A. In a Dropsy of the Thorax, which may collect the Serum from various Parts, the Symptoms are nearly like those of an Empyema; but a due Consideration of the antecedent Causes, discovers their Difference; this is cured by the Operation of the Paracentesis, together with the Use of proper Medicines.

Q. But if Hydatides, and dropfical Abscesses, are formed in the Lungs, by the Collection of the Serum, discharged from the Vessels, and received into large Sinusses, what is to be done?

A. This Species of Dropsy, is equally difficult to be known, or cured; unless the Means used to remove other Symptoms, should, by Chance, effect the Cure.

Q. What is to be done in a Bronchocele?

A. When by any Cause the Serum is collected, and stagnates in the anterior and conspicuous Part of the Aspera Arteria, it often produces a Species of the Bronchocele; which is easily known, if observed, and may be cured by Puncture, Discutients, and by deriving the Humour from the Part affected.

Q. Are

But after all, I must confess, that, with what Prudence soever the Physician discharges his Duty, the Dropsy sometimes returns. But notwithstanding, a high Value ought to be set on this Discovery, by Means whereof many Lives have been prolonged for several Years, and not only made tolerably easy, but sometimes comfortable.

Q. Are the Ovaria in Women ever affected with a Species of the Dropsy?

A. The Ovaria are, sometimes, the Seat of this Disease; but it is never cured. I have seen many Women, that were old and barren, who died of this Dropsy.

Q. Does not the Womb also, sometimes, suffer under a Dropsy?

A. It doth; for, sometimes, the internal Orifice is closely shut, and so much Water is collected in the Cavity of the Womb, that the Belly appears, as if the Person laboured under an Ascites. This Species of the Dropsy is very difficult to be known, by Reason of the fallacious Signs of Pregnancy that attend it; but it may be cur'd, by relaxing the Orifice of the Womb, with Fomentations, Vapours, and uterine Medicines.

Q. What is the Dropsy, call'd Anasarca?

A. When, through the whole sub-cutaneous Fat, the Lymph either stagnates, or is effused, which also affects the Abdomen, and the Scrotum.

Q. What are those Dropsies, called Ascites, and Tympanites?

A. When the same Water is collected either in the Duplicature of the Peritoneum, in the Cavity of the Abdomen, in the Cavity of the Glands, or in the Vessels contain'd in the Abdomen, the Disease is call'd Ascites; as also Tympanites, when the Abdomen is swelled with rarefied Vapours, arising from
the

the Water, Pus, Ichor, or Air, pent up here, and putrified by the Heat.

Q. What are the further Consequences of this Disease?

A. The Feet swell, especially towards Evening, and the Swelling is gradually encreased; then a Swelling daily encreasing, appears in the Abdomen; then follows a Difficulty of Breathing, Thirst, a Sensation of Weight, Numbness, Costiveness, a small Discharge of Urine, a slow Fever, no Sweat; then appears, a Tumor of the Scrotum, Hydatides, Ulcers, Gangrenes, Bleedings at the Nose, an Exomphalos, a Sphacelus of the Viscera, and, at last, the Death of the Patient.

Q. How is a Dropsy * cured?

A. By procuring a free Motion to the Lymph, by evacuating the Water extravasated in the Cavities of the Body, and by strengthening the Viscera with Corroboratives, Chalybeate Wines, and Medicines that are gently astringent. Read *Pharm. Batean. D. Fuller's Medicin. Extemporan.* Make Use of the Paracentesis in a recent Dropsy, where the Viscera are sound.

Take of Gut. Gamb. Diagridium, Resin of Jal. sweet Mercury, fifteen Grains of each,
T t Cream

* The curative Indications are two; the Evacuation of the Water, and the strengthening of the Blood and Viscera: The first is effected by strong Purgatives, and the second by Change of Air, Wine, and other generous Liquors.

Cream of Tartar one Scruple, Syrup of Buckthorn, enough to make it into two Boles for two Doses.

Take fresh Roots of Valerian, *English* Iris, and Dwarf-Elder, of each half an Ounce, Horse-Raddish six Drachms, Senna half an Ounce, Mechoacan two Drachms, Broom-Ashes three Ounces; let them infuse forty-nine Hours, in a cold Place, upon a Quart of Rhenish Wine; to the Infusion, strain'd off, add, Salt of Tartar one Ounce, *Sennertus's* volatile Salt of Tartar three Drachms, Chymical Oil of Camomile one Scruple; drop the Oil upon Sugar, and mix it in a Mortar, and then add it to the Infusion. The Dose, half a Pint every Morning, or every other Morning, according to the Strength of the Patient. &c.

Take true Cassamunair one Scruple, Salt of Vipers half a Scruple, Virginian Snake Root five Grains, with the Syrup of Alkermes enough to make it a Bole, to be taken every Night to promote Sweating.



*Of the * Venereal Disease.*

2. I Desire you would give me a short Description of the Venereal Disease; the Signs of it; and the Method of curing this Distemper.

A. I will do my utmost Endeavour to satisfy you. The Venereal Disease, is convey'd from Parents to Children, and is contagious by

* It is usually said to have made its first Appearance in *Europe* in the Year 1493; tho' others will have it much older, and contend for its being known to the Antients, only under other Names. Mr. *Becket* has attempted to shew, that it is the same with what among our Forefathers was called the Leprosy; and which in many of our antient *English* Writings, Charters, &c. is called Brenning, or Burning. In order to prove his Point, he has searched the Records relating to the Stews anciently kept on the *Bankside, Southwark*, under the Jurisdiction of the Bishop of *Winchester*. Among other Constitutions of these Stews, dated 1162, it was appointed, "That no Stew-holder should keep any Woman that hath the perillous Infirmary of Burning." And in another Vellum Manuscript, now in the Custody of the Bishop of *Winchester*, dated 1430, it is again ordered, "That no Stewholder keep any Woman within his House, that hath any Sickness of Brenning, upon the Pain of making a Fine unto the Lord of a Hundred Shillings." *Arden* defines this Disease, called Brenning, Incendium, to be a certain inward Heat, and Excoriation of the Urethra; which Definition, Mr. *Becket* observes, gives us a perfect Idea of what we now call a Gonorrhea.

As to the Leprosy being the same with this Venereal Disease, it must be owned there are many Symptoms in one Disease, which quadrate well enough with those in the other; but then the Symptoms in each are so precarious, that a great deal of Stress cannot be laid on them.

Common Tradition says, the Venereal Disease first broke out in the French Army, when it lay incamped before *Naples*; on which

by Sucking, or giving Suck, by the * Saliva, by Handling, by the Sweat, by the Semen, and by Exhalation. It generally discovers itself, first, in the Part where it is contracted: Nor was this Distemper ever found in a Man, or Woman, who was not infected by another. The Infection is first discovered by the Itching, the Heat, the gentle Inflammation, the whitish, squamous, corroding, mucous Pustles, that are incurable by common Remedies; which, soon encreasing, it infects the adjacent, and, generally, the external Parts, with the like ulcerous Pustules; and, afterwards, the internal Parts; as the Lips, Gums, Palate, Tongue, Fauces, Nose, Brain, Lungs, Liver, Spleen, Uterus, &c.

These Pustules discharge a mucous, tough, greenish Sanies, which corrodes the Flesh, but they spread more in Breadth, than in Depth; hence arise Chancres in Men, and the Fluor Albus in Women.

In

which the *French* call it the *Neopolitan* Disease, and the *Italians* the *Mal Francese*. But others go much higher still, and suppose it to be the Ulcer *Job* complained of so grievously: And in a Missal printed at *Venice* in 1542, there is a Mass in Honour of St. *Job*, to be said by those recovered of this Disease. But the Opinion that prevails most among our Physicians, is, that the Disease is of *Indian* Extraction, and that it was brought hither by the *Spaniards* from the *American* Isles, where it was very common; whence the *Spaniards* call it *Sarva des India*, or *las Bumas*.

* This, tho' countenanced by some Authors, is absolutely erroneous.

In Men, a violent Inflammation of the Penis soon terminates in a Gangrene. Then the Testicles become tumid, painful, and often grow ulcerated, with an inflammatory Tumor of the vesiculæ Seminales; and also Caruncles, Stanguries, Erosions of the Urethra, of the Prostatata, of the Neck of the Bladder, and the Seminal Vessels. The like Symptoms happen to Women.

Then the Infection is conveyed to the other Members, producing nocturnal Pains of the Limbs, and Stiffness of the Joints: Hence there is a Corrosion of the Palate and Cartilages, chiefly of the Nose; then seizing the middle Part of the Bones, it produces a Caries, especially in the Cranium; then the Parts, situated upon these Bones, rise into malignant Apof-temes.

This Disease also raises hard Tophs in the Bones, which at first create but an obscure Pain, which grows sharper by Degrees, 'till at last the superincumbent Parts are corrupted: So that it is plain by what Signs this Distemper may be known.

Q. How is the Cure performed?

A. A Gonorrhea is cured by a Bath. e. g.

Take of the green Herbs of Mallows, Pelitory of the Wall, Orach, Marshmallows, of each two Handfuls and a Half, Camomile Flowers two Handfuls, Flowers of Melilot, and Dill, of each one Handful and a Half, Linseed bruised four Ounces, mix'd together

in

in a little Bag, a Sheep's Head broken to Pieces with the Wool, without the Eyes, Tongue, or Brains ; boil all these together in a sufficient Quantity of Spring Water to make a Bath.

2. By Fomentations. e. g.

Take the Roots of Horse-radish, Grass, and Parsley, of each one Ounce, Herbs of Chervil, Fennel, Parsley, of each one Handful and Half, Seeds of Smallage, Fennel, Parsley, Carraways, Annise, and Berries of Juniper bruised, of each six Drachms ; of which make two little Bags, and boil them in equal Parts of Water and Wine, to be applied alternately to the Tubes of the Vagina, and to the Genital Parts.

3. By Injections.

Take of the Decoction of Mercurius Dulcis a sufficient Quantity, of Honey a sufficient Quantity ; mix it for an Injection * in a Gonorrhea.

4. By Mercurial Purges often repeated.

Take Extract of Ruidius fifteen Grains, Sweet Mercury one Scruple, Extract of the Troches of Alhandal, one Grain and a Half to three Grains, Extract of Saffron, and Venice Turpentine, of each enough to make it into Pills.

5. By

* Injections with Mercurial Ointment dissolved in Pectoral Apozem, are frequently used in the present Practice.

5. By Emulsions.

Take of Sweet Almonds, Num. 8. Seeds of Melons, Pompion, and white Poppy, of each half an Ounce, Barley Water one Pint and Half, with a sufficient Quantity of Sugar Candy, and two Drachms of Sal Prunella, to make an Emulsion. S. A.

6. By Balsamic Medicines.

Take Chio Turpentine one Drachm, white Amber, Balsam of Peru, and of Capaiba, of each half a Drachm, Powder of Liquorish enough to make Pills of a moderate Size.

Or, take Balsam Capaiba three Drachms, two Yolks of Eggs, Syrup of Balsam, or Mal-lows, two Ounces, white Wine half a Pint. M.

7. By abstaining from all Meats and Drink that excite to Venery, and, on the contrary, by a slender cooling Diet.

8. By persisting in the Cure, till nothing unusual distills from the Penis, or appears in the Urine.

The Inflammation of the Penis is removed by anodyne, emollient, and discutient Cataplasms, by Fomentations of the like Nature, by liberal Venesection, and the above mentioned Medecines.

Venereal Buboës are removed by Dissipation, by Means of specific Plaisters; by Suppuration, if these Plaisters prove ineffectual; and by Depuration when they are open.

A tumid Testicle is to be fomented with the Fomentation before mentioned. Venesection

is

is to be performed in the Arm, and a Plaister applied to the Scrotum ; such as Emplastrum de Ranis cum Mercurio Mynficti, &c. till it returns to its natural State, otherwise it must be cut off,

Pustules and Chancres are to be corroded to the Quick with Mercurials, and then cured by Degrees, with the gentler Preparations of the same Kind.

N. B. We are continually to use the internal Medecines mentioned above.

The Fluor Albus in Women, is cured by the same Medicines ; but chiefly by strong detergent Fomentations and Mercurials : But when the Pustules are dispersed all over the Body, with nocturnal Pains, and large Buboes, Salivation is necessary.

Concerning these Things, read the Chapter of contagious Diseases in my Principles.

Of Fevers in General.

1. **WE** are now to explain the Nature of a Fever, the inseparable Companion of an Inflammation ; the Cause of many Diseases, and of Death ; and frequently also of a Cure.

2. And because it is generally esteemed to be of a very abstruse Nature, we are to use the greatest Caution in our Researches.

3. Never-

3. Nevertheless, from the great number of Symptoms that generally attend a Fever, it is easy to fall into Errors; and there may be a Fever without these Symptoms.

* 4. That we may avoid these Errors it is necessary, that out of an infinite Number of Symptoms, we should chuse those only, which always attend every Kind of Fever; which when they are known to be present, declare to all Physicians that there is a Fever, and which, when they are absent, they judge that a Person is free from a Fever.

5. Therefore from a Knowledge, and due Consideration of these Symptoms, the particular Nature of a Fever is to be discovered.

6. In every Fever there is a Shivering, a quick Pulse, and Heat, at different Times, and in various Stages of the Disease.

7. When these three Symptoms arise to any great Degree, and are attended with Danger, it is called an acute Fever.

8. But where they proceed slowly, either with, or without Danger, it is called a slow Fever.

9. Both these Species of Fevers are, either common and epidemical, or only affect particular Persons.

10. Those are called acute febrile Diseases which are accompanied with an acute Fever; and those are called chronical febrile Diseases which are attended with a slow Fever.

U u 11. Hence

* Read *Van Swieten's Commentaries on Boerhaave.*

11. Hence it is, that all these febrile Diseases are not to be explained, without a previous Knowledge of the Nature of that Fever with which they are attended.

12. Which Knowledge is to be acquired from the Consideration of the three common Symptoms, of Shivering, a quick Pulse, and Heat.

13. Though these Symptoms are present at some Time in every Fever, yet the Quickness of the Pulse is the only Symptom that continues from the Beginning to the End of the Disease, and by which a Physician judges that a Fever is present.

14. Therefore, whatever Knowledge a Physician thus acquires of a Fever, depends entirely on the Velocity of the Pulse.

15. The proximate Cause therefore of this Velocity of the Pulse, is likewise the proximate Cause of the Fever thus known.

16. This Cause therefore, may be a too quick Contraction of the Heart. Or,

17. A too quick reciprocal Influx of the Spirits and Blood into the Muscles and Cavities of the Heart.

18. Almost all Fevers hitherto observed, that arise from an internal Cause, begin first with a Sense of Cold and Shivering, and this Sensation is greater or less, shorter or longer, internal or external, according to the Constitution of the Patient, or the Nature and Cause of the Fever.

19. In the Beginning therefore of every Fever, from an internal Cause, the Pulse is quick, small, and often intermittent; and there is often a Paleness, Coldness, Rigor, Tremor, and Insensibility of the extreme Parts.

20. Hence it is plain, that the sanguineous Humours stagnate in the Extremities of the minute Vessels, and that the Heart, at the same Time, is irritated by some unusual Cause.

21. From which two Circumstances, we understand the Cause of all the Symptoms that appear as before related.

22. In every Fever, introduced by these Symptoms, there arises an Heat, which is greater or less, shorter or longer, internal or external, universal or local, according to the Difference of Fevers.

23. As the Heat succeeds the Fever already produced, so the former must be rather the Effect, than the Cause of the latter.

24. Therefore, a quick Contraction of the Heart, and an increased Resistance of the Capillary Vessels, compleats the Idea of every acute Fever.

25. Both these Circumstances may be produced in a live Animal by an infinite Number of Causes; and as they may happen both at the same Time, or separately, so when one is produced, the other easily follows.

26. Wherefore the proximate Cause of a Fever, which consists in a quick Contraction of the Heart, and the increased Resistance of the Capillary

Capillary Vessels, may have an infinite Number of proximate Causes.

27. Which are either singular, and peculiar to some Persons; or universal, and common to many; and these depend on the Air, Diet, and the Patient's Way of Living.

28. The Causes therefore of a Fever, are either Particular, or Epidemical.

29. The proximate particular Causes may be reduced to five Classes; which are,

First, Acrid Aliments, Drinks, Medicines, or Poisons; when either they have such a Property, that they cannot be digested; or taken in such a Quantity, that they irritate, suffocate, obstruct and putrify.

Secondly, The Retention of such Things in the Body, as ought to be evacuated, proceeding from Cold, and a gloomy Disposition of the Mind, improper Aliments, Drinks, Medicines, Poisons, too much Ease, a Remission of usual Exercises, Obstructions, &c.

Thirdly, Too much Exercise of the Mind or Body; or the Body being over heated.

Fourthly, External Applications of an acrid, pungent, corroding, lacerating, caustic, and inflammatory Nature.

Fifthly, Whatever produces a great Change in the Humours, and their Motion; such as many internal and external Things; as Hunger, great Evacuations, the Pus, Water, and chor in a Dropsy, or Empyema; an acrid Serum collected in any Part, the Bile heated, an Inflammation,

Inflammation, a Suppuration, a Gangrene, a Cancer, long Watchings, intense Study, and Venereal Excesses, &c.

30. The Effects of a Fever are, a quicker Expulsion and Propulsion of the Fluids, an Agitation of their stagnating Parts, a mixing them together, a Prevalence over the resisting Matter, a Concoction of the Humours, a Secretion of them when concocted, and a Crisis of that, which by its stimulating and coagulating Quality produced the Fever; a Change of Health and Soundness into a morbid State; which produces a Disposition fit for bearing those Things to which the Patient was less accustomed before, and producing Thirst, Heat, Pain, Anxiety, Weakness, Weariness, a Sense of Weight, and Loathing of Food.

31. The sooner the Viscidity of the Humours is resolved, and the Irritation allay'd, the lighter, shorter, and more salutary is the Fever, and the contrary. Fevers are also various according to the different Degrees of this Irritation and Viscidity.

32. Hence it is, that Medicines have frequently the same Effect in Fevers as in other Diseases.

33. Hence also the Beginning, Increase, Height, Decrease, Crisis, Change, and Cure of Fevers, are different in acute, and particular Fevers.

34. A Fever terminates in Death, in some other Disease, or in Health.

35. A Fever terminates in Death when the Solids are destroyed, by too strong a Power acting on them ; or the Fluids are so depraved that they obstruct the Vitals ; or those Vessels, through which new Fluids ought to be conveyed, in the Room of those lost ; hence arise Inflammations, Suppurations, and Gangrenes, in the vital Viscera, the Heart, the Lungs, and Cerebellum ; or apthous, Ulcers in the first Passages, which are the frequent Causes of Death in Fevers.

36. A Fever terminates in some other Disease, when either by a too violent Agitation it injures the Vessels, and evaporating the more fluid Parts of the Humours, inspissates the Rest ; or when by a too weak Action it has not Force to resolve the Coagulations of the Fluids ; or when it deposits the critical Matter in some obstructed, dilated, or ruptur'd Vessels : Hence arise red Spots, Pustules, Erysypelas, Measles, Small Pox, Phlegmons, Buboës, Inflammations of the parotid Glands, Abscesses, Gangrenes, Sphacelus's, Schirrus's, &c.

37. A Fever terminates in Health,

First, When by its Force it subdues, resolves, renders moveable, and carries off by insensible Perspiration, the material Cause of the Fever ; and likewise checks its Impetus, by restoring an equable Circulation : This universal Resolution. nearly resembles the Resolution in the Inflammation of a particular Part.

Secondly, When the Matter of the Disease
(being,

(being, by the Force of the Fever, subdued, resolved, and rendered moveable) still retains a certain Quality, which resists the equable Circulation, and stimulates the Vessels; from hence exciting some sensible Evacuation, it is expelled, by Sweat, by Spitting, a Diarrhea, Vomitting; a copious Discharge of Urine, happening critically after the Concoction of the Matter; the State of the Disease generally terminates within fourteen Days.

38. A Fever also terminates in Health, when the Matter of the Disease being, by the Force of the Fever, subdued, resolved, rendered moveable, and again assimilated with the sound Humours, circulates without any Crisis, or any bad Consequence.

39. The Genius, Difference, and Duration of acute Fevers, if observed from the Beginning, through the Increase, to the Height of the Disease, enables us to foresee its Event, Changes, and Termination.

40. From all the Circumstances before related, the general Diagnostics, and Prognosticks of Fevers, may be easily discovered.

41. The general Cure of Fevers is most successfully obtained,

First, By preserving that Strength on which Life depends.

Secondly, By correcting and expelling the acrid irritating Matter.

Thirdly, By dissolving and expelling Viscidities.

Fourthly,

Fourthly, By mitigating the Symptoms.

42. The Strength on which Life depends is supported by Aliments, and Drinks of easy Digestion, opposite to Putrefaction, allaying Thirst, fit for increasing the Appetite, and contrary to the known Cause of the Disease.

43. Food is to be given when the Fever is absent, or at least when its Force is weakest.

44. Also in small Quantities frequently repeated, lest the Viscera should be oppressed, or some Change thereby effected.

45. The Quantity and Quality of the Aliments are determined ;

First, From the Probability of the Duration of the Fever, either from one, four, seven, nine, eleven, fourteen, twenty one, thirty, forty, or sixty Days ; for as much Food is to be given, as will suffice to support the Strength, and render it fit for Concoction, and a Crisis : The shorter the Disease, the less and weaker should the Aliments be, and the contrary.

Secondly, From the Age of the Patient ; * for the younger and older the Patients are, they support Hunger with more Difficulty.

Thirdly, The Degree and Vehemence of the Disease, when known, require Aliments of different Qualities and Quantities: In the Height, a small Quantity of the lightest Food is to be used ; but in the Increase, and Decline, more Food may be given ; and the more also, as the Disease is more distant from its highest Degree.

Fourthly,

* Middle aged People support Hunger best.

Fourthly. From the Place where the Patient lives ; for those who live near the \AA quator conveniently bear a light Diet, which those who live near the Poles with Difficulty support.

Fifthly, From the Season of the Year, because the Summer requires light, the Winter stronger Food.

Sixthly, From the Custom and Constitution of the Patient ; for the Person who, when in Health, lives luxuriously, and digests it easily, requires more, because the Vessels and Viscera were accustomed to it.

Seventhly, And lastly, from the Sense of Lightness, or Weight, following the use of the Aliments.

46. Any external; irritating Substance, such as the acute Fragments of Glass, Metal, Wood, Stone, and Bones; or stimulating, corroding, and vesicating, caustic, septic and poisonous Substances, are with all Expedition to be removed, and the Parts injured are to be fomented with viscid mucous, mild, oleous, anodyne, and gently aperient Fomentations.

47. An acrid irritating Substance lodged internally, which causes an Inflammation, Suppuration, Gangrene, Sphacelus, Cancer, carious Bone, Ichor, Pus, and acrid or stagnant Lymph, is to be removed, or corrected, according to the Rules of Art.

48. An acrid irritating Quality in the Fluids, may, and ought to be removed or corrected.

ed, by the Use of the six Non-naturals; and by various Remedies adapted to the known State of the Disorder.

First, Disorders proceeding from too much Motion, are to be removed by Rest, both of the Body and Mind; and by moistening, diluting, mild, and lenient Medicines.

Secondly, Disorders from too hot an Air, are likewise removed by temperating the excessive Heat, by cooling Exhalations, chiefly by Plants fit for this Purpose; by drinking subacid Water, a little stimulated with a small Quantity of subacid Wine; by subacid, gently demulcent, and moderately salted Food, and by Medicines of the same Nature.

Thirdly. Disorders from too moist an Air; by correcting the excessive Moisture of it, with large Fires of aromatic and resinous Woods, and the Exhalation of aromatic Substances.

Fourthly, Disorders from an acrid, putrefied Air; by correcting the Air by throwing Nitre, Gunpowder, Vinegar, and Salt upon live Coals.

Fifthly, Disorders from the Passions; by making Use of Reason, and the contrary Affections, by Variety of Objects, Anodynes, and Opiates.

Sixthly, From an acrid Food; by diluting the Acrimony, and by checking, absorbing, and changing it into a neutral Salt; and this is effected by the aqueous and gelatinous Parts of Animals, by oleous and cretaceous Substances, Shells

Shells of Fishes, Crabs Eyes, pinguious Earths, fixed alkaline, volatile, simple, and compound Salts.

Seventhly, When the Disorder proceeds from too great a Quantity of Food constringing the Stomach, it is to be removed by diluting with aqueous Medicines, by Fasting, by Emetics, and Purgatives.

Eighthly, From acrid, fermented Liquors, it is removed by the Medicines, Num. 5. 6.

Ninthly, From over Watchings, the Cure is performed by Num. 1. 2. 5.

Tenthly, If the Fever proceeds from a Retention of the excrementitious Humours, their Passages must be lubricated, and their proper Emunctories opened; in the mean Time, the vital Powers that expel them, must be stimulated and increased, both by internal and external Remedies.

49. The Emunctories are opened by resolving the Matter fix'd therein, and by relaxing them when obstructed; this is done by Bathing, Fomentations, Frictions, Abrasion of the Hair, and cleansing of the Skin; and also by Vesicatories, and Alexipharmics.

50. Whatever stagnates at the Extremities of the conical Vessels, by Reason of too great a Quantity of Blood compressing the Vessels, is rendered fluid by diminishing the Quantity of Blood by Venesection; we learn this by the Signs of a Plethora. *Vide the Rudiments of Physick.*

51. What

51. What adheres to the Extremities of the capillary Vessels, on Account of spasmodic Contractions of their Fibres, by which their Capacities are lessened, is resolved by relaxing the Fibres; which is performed by moistening lenitive, diluting, resolving, and absterging Remedies; and by removing the Cause of the acrid Contraction, which is done by aqueous Medicines, both external and internal, applied warm, or taken inwardly; together with the smoothest, most tasteless, and mildest oleous Substances.

52. What adheres by its own Viscidity and Lensor, is resolved by various Medicines; the principal of which consists in a due Government of the Fever itself, that by Means thereof, the Coagulation may be resolved, (30, 32, 36, 37.) Therefore it is necessary, so to moderate the Force of the Fever, as

First, To prevent Inflammations, Suppurations, Gangrenes, and Sphacelus's; the Danger of which appears from the Violence of the Symptoms, chiefly Heat, compar'd with the Strength of the Vessels.

Secondly, That the more fluid Parts of the Blood may not be dissipated by its violent Motion; the Signs of which are a Dryness of the Nostrils, Eyes, Throat, and Tongue, an Hoarseness, a Dryness of the Skin, a small Quantity of Urine, and a small, quick, and unequal Pulse.

Thirdly,

Thirdly, That before the Concoction of the febrile Matter, the Fever may not become too weak, so as not to be capable of subduing, resolving, moving, secreting, and excreting the Cause of the Disease: This State is known by a general Languor of all the vital Actions, before the Signs of Concoction appear.

53. If the febrile Motion is exorbitant, it must be moderated by Abstinence, or a very slender Diet, by aqueous Drinks, by a cool Air, by calming the Passions, by Venesection, by cooling Glysters, and by mild, aqueous, glutinous, cooling, anodyne, and opiate Medicines.

54. If the Fever is too languid, it must be raised by a cardiac Regimen, consisting of the more generous Sorts of Food and Drinks, by a warm Air, by exciting the Passions, by acrid, volatile, aromatic, fermented Medicines; by Frictions, Heat, muscular Motion, Baths and Fomentations.

55. Next to the due Regulation of the febrile Motion, the best Remedy against the Viscidity of the Juices, is restoring the elastic Force of the Vessels, by lessening the Quantity of the Fluids by copious Venesection, soon performed, and from a large Orifice; and at the same Time, or soon after, increasing their Motion by stimulating Medicines.

56. And lastly, the viscid Juices are rendered fluid, by diluting with aqueous Drinks, Baths, Fomentations,

Fomentations, and Glysters, using Frictions at the same Time.

57. And these Drinks have a better Effect if taken warm, if resolvent Salts, as Nitre, are mixed with the aqueous Fluids ; and if gentle, aromatic, bitter, and lactescent cooling Vegetables are boiled in them.

58. But that these (56, 57.) may operate efficaciously, Venesection is to precede their Use, for this facilitates their Ingress, their Mixture with, and Action upon the Blood.

59. As soon as these Remedies (52, 53, 54, 55, 56, 57, 58) have dissolved the Viscidity, by a Continuance, or Increase of the same, it is forced through the Vessels or expelled ; sometimes however it may be so far corrected as to require no Expulsion.

60. The Symptoms usually attending an acute Fever are, Cold, Tremors, Anxiety, Thirst, Nausea, Eructations, Vomiting, Weakness, Heat, Restlessness, Dryness, Delirium, Coma, Watchings, Convulsions, Sweats, Diarrheas, and inflammatory Pustules.

61. All which arising from the Fever (24, 30) cease when that Cause is removed : (37, 38, 41, to 60) therefore they require no particular Method of Cure, if they can be supported, without endangering Life, till the Termination of the Fever.

62. But these Symptoms often arise from an Endeavour of the vital Powers to form a Crisis, and expel the critical Matter ; and then they
precede,

precede, accompany, and follow the Crisis, in which Case the salutary Work of Nature must not be disturbed.

63. But if any of these Symptoms are unseasonable, or too severe to be supported without Danger of Life; if so troublesome, as to render the Patient insupportably uneasy; if there is Danger of their producing some more violent Disorder, then they must be mitigated by proper Remedies; always having regard to the Cause and State of the Distemper itself. I shall proceed to examine the particular Symptoms.

Febrile C O L D N E S S.

64. Coldness in the Beginning of acute Fevers, arises from a decreased Attrition of the Liquids with each other, and with their Vessels; a Diminution of the circulating Motion, a Stagnation of the Liquids at the Extremities of the Vessels, a diminished Contraction of the Heart, or a less Evacuation of its Ventricles, and a less Influx of the Spirits from the Cerebellum.

65. This Coldness, if it is great and of long Duration, causes polypous Concretions in the larger Vessels near the Heart; and in the small Vessels an Evacuation of their Fluids; in both Cases many severe Disorders are excited.

66. Hence it appears, why intense Coldness in the Beginning of an acute Fever, is a very bad Presage; and why the Fever is dangerous
in

in Proportion to the Cold perceived upon its first Attack; and why in the Beginning of the Plague, an excessive Coldness is succeeded by an excessive Heat.

67. If any Attempts are made to remove the Coldness, in the Beginning of acute Fevers, by any very stimulating Medicines, a Foundation is often laid for an incurable Inflammation; for this Reason all acrid, saline, oleous, and aromatic Medicines are pernicious in this Case.

68. But it is cured most successfully in the following Manner:

* Take of Barley Water a Pint and a Half, Christal Mineral four Scruples, Plague Water two Ounces, Compound Syrup of Pionies enough to make it palatable, mix it for a Julep, to take with the following Bolus, every sixth Hour.

Take of Christal Mineral half a Scruple, Tartar vitriolate seven Grains, Conserve of Hyps, and Spirit of Vitriol, of each a like Quantity, enough to make it a Bole, drinking after it a Draught of the Julep before prescribed.

Take a Sheep's Head with the Wool on, broke to Pieces, without the Tongue and Brains, boil it in a Quantity of Water till reduced to three Quarts, use the strained Liquor for a Fomentation, Vapour, Bath, or Lotion.

Take
* Nitrous Medicines and neutral Salts, are chiefly used in the present Practice.

Take Palm Oil two Ounces, Oil of Mace by Expression, and Compound Spirit of Lavender, of each one Drachm, to be used by gently rubbing it over the Body.

69. Which Medicines being used at first, often cure, and prevent very great Disorders. (65)

A febrile TREMOR.

70. A Tremor is a wavering of the Muscles, between a State of Tension and Relaxation; the relaxing and distending Causes, suddenly and involuntarily succeeding each other, which proceeds from an alternate Cessation and Revival of the Influx of the Spirits and the Blood into the Muscles: In the Beginning of a Fever therefore, it arises from a partial Stagnation both of the Blood and Spirits; but in the End of a Fever, from a Deficiency of them, by being greatly wasted.

71. A Tremor, if of long Duration, obstructs the Circulation of the vital Humour, and produces all the bad Consequences arising therefrom.

72. Hence we know the Diagnostic, and Prognostick Signs of a febrile Tremor, and why it is attended with Coldness (64); why a great Tremor is so dangerous a Symptom, why there is a Tremor in the Passions of the Mind, why in approaching Death; why it follows

follows all great Evacuations, and upon drinking too much Liquor of any Kind.

73. A febrile Tremor is cured, by restoring an equable Influx of the Blood into the Arteries, and its equal Pressure upon them, and also of the Spirits into the moving Fibres; this is effected in the beginning of a Fever, by the use of the Remedies that dissolve Viscidities, and restore the Strength, (from 49, to 60.) But at the End of a Fever, by whatever restores the wasted Fluids, and corroborates the Fibres and Viscera. For this Purpose the following Prescriptions are intended:

Take of Compound Powder of Crab's Claws one Scruple, Virginia Snake Root seven Grains, Diaphoretic Antimony fifteen Grains, Confection of Fracastorius half a Drachm, Syrup of Saffron enough to make it a Bole, to be taken every sixth Hour, drinking after it a Draught of the following Julep.

Take of Waters of black Cherry, Borrage, and Balm, of each three Ounces, Compound Piony one Ounce and Half, prepared Pearls four Scruples, Sugar Candy enough to make it a Julep: A Draught to be taken often in the Intervals; the Sweating, when begun, is to be continued by small Draughts, frequently repeated, of Sack Whey, or small Beer with a little Mace boiled in it.

Take of true Armenian Bole, and red Coral prepared, of each one Scruple, Confection of Fracastorius one Drachm, Treacle Water two Ounces,

Ounces, Black Cherry Water three Ounces, mix for two Doses, one to be taken six Hours after the other.

Take Barley Water a Quart, Syrup of Raspberries one Ounce and Half, of white Poppies half an Ounce, Spiritus Salis Dulcis two Drachms, make it a Julep, to be drank at Discretion, in the interval of the two Doses.

Proceed cautiously and slowly in the Use of these Medicines, from the first to the last Stage of the Disease.

Febrile ANXIETY.

74. A febrile Anxiety, is caused by some Impediment to the Passage of the Blood from the Heart; and from hence an Impossibility of its Circulation through the Ramifications of the Pulmonary Vessels, and those of the Aorta; or, it is caused by a Spasm of the contracted Vessels, or an inflammatory Spissitude of the Blood, rendering it incapable of Circulation.

The like Symptom is produced, by an Impediment to the Passage of the Blood through the Vena Porta, from the same Causes: Since therefore all the venous Blood, brought by the celiac and mesenteric Arteries cannot return, it stagnates, distends the Vessels, and resists the fresh Influx of the Blood into the Arteries, hereby producing fatal Consequences: For this Reason it is necessary to observe these Causes,

Causes, in every acute Disease with the greatest Accuracy, and to remove them by all possible Means.

75. If such an Anxiety continues long about the Heart, and vital Parts, it will produce polypous Concretions, Inflammations, sudden Gangrenes, attended with intollerable Uneasiness, and Death soon will follow: But when the Cause is situated in the Hypochondria, it will produce an excessive Sickness at the Stomach, the other Viscera not having so acute a Sensation; this is succeeded by sudden Putrefactions of the Blood in these larger and weaker Vessels, whence Gangrenes, Putrefaction of the Liver, and a fatal Dysentery arises from this Putrefaction.

76. From hence the Physician may understand the Nature and Cause of such an Anxiety, and what it presages; and will distinguish between that kind of Anxiety, proceeding from a nervous Cause, without a previous Fever, and this Anxiety from an acute Fever, which declares itself by its own proper Signs; thence comparing this with the Violence, Duration, and the Place of the Disorder, he will be able to discover its Nature, and to learn why, in almost all Diseases, at the Approach of Death, the last Scene of the Tragedy is closed with extreme Anxiety; why a convulsive Anxiety is attended with little Danger, but an inflammatory Anxiety with great Danger; and why Uneasiness, Restlessness, Sighing,

Sighing, difficult Respiration, and obstinate Want of Sleep, in suppuratory, or inflammatory Diseases are the Tokens of Death.

77. Hence also it appears, that various Methods of Cure are required, to mitigate the Severity of this Disorder; the Discovery of which depends on the right Knowledge of the Nature of the Symptoms.

When therefore Anxiety is found to proceed from a convulsive Cause, it is removed by Venesection, by Vesicatories, and by Alexiterials mix'd with Opiates.

Take of Powder of Crabs Claws one Scruple, Diaphoretic Antimony eight Grains, Castor five Grains, English Saffron three Grains, with Confection of Alkermes, enough to make it a Bole, to be taken every third or fourth Hour, drinking after it a Draught of the following Decoction :

Take of Roots of Eringo, and Spanish Scorzonera, of each two Ounces, China Root half an Ounce, Raisins of the Sun one Ounce and Half, boil them in three Quarts of Spring Water to two Quarts; infuse in it three Drachms of good Cinnamon, and half an Ounce of Fennel Seed, make it an Apozem of which the Patient may drink freely.

Let Venesection be used a second Time, and repeated almost to Fainting; apply more Blisters to the inner Part of the Arms and Thighs, give Vomits and Purges, &c. if the Case requires them; keep the Mind calm, relax the
Fibres,

Fibres, the Vessels, and the Viscera, quiet the Tumult of the Spirits by Anodynes and Narcotics.

If the Anxiety is excited by an inflammatory Viscidity of the Blood, the foregoing Prescriptions are serviceable; and besides these let the Patient drink copious Draughts of warm aqueous Liquors, in which farinaceous Vegetables have been boiled, impregnated with Honey and Nitre, somewhat acid, and slightly aromatic; also small Glysters may be often injected, and if possible, retained a long Time.

78. And observe, that this Symptom being extremely dangerous, earnestly calls for a safe and speedy Cure.

Having described these Symptoms, as briefly and methodically as the Nature of this Treatise would permit, I shall proceed to intermitting Fevers, which I intend also to handle with Brevity, omitting the other Symptoms of acute Fevers; such as, a febrile Thirst, Nausea, Vomiting, Weakness, Heat, Delirium, Coma, Convulsions, Sweats, Diarrhea, Exanthemata, the continued Fever, the putrid continual Fever, and the *Causus* or ardent Fever; for which I refer the Reader to *Boerhaave*, *Sydenham*, *Pitcairn*, and other great Physicians. If I have Time and Leisure, I will hereafter treat of these Subjects; but among these, I shall now take particular Notice of the *Causus* or burning Fever, on Account of its Frequency, Danger, and Difficulty of Cure.

An ardent Fever.

THE primary Symptoms of this Disorder are, an Heat almost burning to the Touch, unequal in different Parts of the Body, most ardent about the vital Parts, but less in the extreme Parts, which are sometimes cold, rendering the Breath extremely hot; a Dryness of the whole Skin, Nostrils, Mouth, and Tongue; a dense, difficult, and quick Respiration; a dry, yellow, black, parch'd, rough Tongue; an insatiable Thirst, sometimes suddenly removed; a loathing of Food, a Nausea, and Vomiting; Anxiety, Restlessness, and great Weariness; a little Cough, a Delirium, Frenzy, obstinate Watching, Coma, Convulsions, with Exacerbations on the uneven Days.

The Causes of a burning Fever may be, excessive Labour, the Heat of the Sun, Thirst long endured, the excessive Use of heating, fermented, aromatic, acrid Substances, and immoderate Weariness, especially in Summer, &c.

This Fever hath this Progress; on the 3^d and 4th Days it often proves mortal; and if it attacks the Patient in its highest Degree, rarely exceeds the 7th without proving fatal. It is often terminated by an Hæmorrhage, which if it is small on the 3^d or 4th Days is a mortal Sign, which may be predicted by the Pain of
the

the Neck, the Heaviness of the Temples, a Distention of the Præcordia without Pain, a Dimness of Sight, an involuntary Discharge of Tears without any other mortal Sign, a Redness of the Face, an Itching of the Nostrils; and this Hæmorrhage is most salutary on the critical Day; on which Day also the Fever is terminated by Vomit, Stool, Sweat, Urine, and the Expectoration of a thick Matter: If the Fever increases on the * even Days, and before the 6th it is a very bad Sign; black and thin Urine, in a small Quantity, is a Token of Death in this Disease, as is likewise bloody Urine; an injured Deglutition is a bad Sign, and a Coldness of the extreme Parts is a very bad Symptom; a Redness and Sweating of the Face, is also a bad Sign; and an Inflammation of the parotid Glands, without Suppuration, is mortal, as is likewise a Flux in this Disease. When attended with a Tremor, it ends in a Delirium, and then in Death. It often changes into a Peripneumony with a Delirium. That Species of burning Fever, which arises after violent Pains of the Belly, is of the worst Kind; it is critically resolved by a Rigor.

This Disease is easily known by these Signs, nor can its proximate Cause be mistaken, for it proceeds from the Blood's being deprived of its milder and more fluid Parts, by an Inflammation

* The even Days are 2, 4, 6, 8, &c.

The uneven Days 1, 3, 5, 7, 9, &c.

mation through the whole Body, while the Strength of the Patient is vigorous. Hence also sure Prognostics may be made, with respect to the Termination of this Species of Fevers.

The Cure of this Fever requires a pure cool Air, frequently renewed; Cloaths that are not suffocating, or burthenfome to the Patient; a frequent erect Posture of Body; large Quantities of mild, demulcent, subacid, aqueous and warm Liquors used as Drink.

Take of Roots of Spanish Scorzonera two Ounces, Tormentill one Ounce, Hartshorn six Drachms, boil them in two Pints and Half of Spring Water to one Pint and Half; to the strained Liquor add Syrup of Lemons three Ounces, make it an Apozem.

Take of Christal Mineral half a Scruple, Conserve of Hips two Scruples, Oil of Sulphur *per* Campan. two Drops; make it a Bole to be taken every fourth Hour, drinking after it a Draught of the foregoing Apozem.

Further, the Case requires light farinaceous Food of Barley, Oats, and subacid Fruits; Venesection in the Beginning of the Disease, if there is a Plethora, or Signs of particular Inflammation, &c. Mild, diluting, and laxative Glysters are to be often used.

If there is an Anxiety, or Signs of a Delirium, &c. it is hardly credible what great Effects are produced by Vescatories; wherefore, in such a Case, let sharp and large Blisters, Num. 1, 3, or 5: be applied to the Shoulders,

the

the inside of the Thighs, of the Arms, &c. as the Case requires.

For resolving beginning Coagulations and Stagnations in any Disease, in Persons of all Ages, I have never found any Remedy have so good and speedy an Effect as Blisters.

Add to these aqueous, mild, nitrous, gratefully acid, and gently laxative Substances. e. g.

Take of Barley Water, with Orange Peel boiled in it, one Pint, in which dissolve Manna two Ounces, more or less, according to the Age and Strength of the Patient, Cream of Tartar four Scruples; to the strained Liquor add Oil of Sulphur, or Juice of Lemons, enough to give it a grateful Acidity.

To these, if we add what has been said in the general Rules, relating to the Cure of acute Diseases, and their Symptoms, we shall clearly understand what Remedies are proper for the Cure of any burning Fever.

Intermitting Fevers.

79. **F**ROM the foregoing Observations, the great Variety of Fevers does evidently appear: Those that carry on a febrile Motion once excited, with the same Impetus from the Beginning to the End, are called continual Fevers. Those that have some Remission or Abatement of their Impetus at certain Times, without

without an intire Cessation of the Fever, are called continual remitting Fevers. Those that at certain Times, have such a Remission of their Impetus, that the Fever entirely ceases between the two Paroxysms, are called intermitting Fevers.

80. The Diagnostic Signs of an intermitting Fever are obvious, and its Distinction into various Classes easy, as they depend only on the difference of Time in the Returns of the Paroxysms.

81. But we ought to know in general, that intermitting Fevers are either Vernal, and prevail chiefly in *February*, and the following Spring Months; or Autumnal, which prevail in *August*, and continue till the Winter: Which Distinctions is necessary, on Account of the various Conditions, Symptoms, Terminations, Durations, and Cure of these Fevers: Also one intermitting Fever removes another.

82. Intermitting Fevers in the beginning of Autumn, often resemble those of the continual Kind, on Account of their longer and redoubled Paroxysms; whereas they differ very much in their Nature and Cure.

83. They begin with a Yawning and Stretching, a Weariness, Cold, Horror, Rigor, Tremor, and Paleness of the Extremities, a difficult Respiration, an Anxiety, a Nausea, a Vomiting, and a weak, quick, and small Pulse; the more violent and numerous these Symptoms are, the worse the Fever is; and after-

afterwards the Heat and other Symptoms are the worse: This is the first Stage of intermitting Fevers, which corresponds to the Increase, or second Stage of continual Fevers, and is of all the other Stages the most dangerous, for then the Urine is generally crude and thin.

84. This Stage of an intermitting Fever, is succeeded by another, which begins with Heat, Redness, a strong, large, and free Respiration, a lesser Anxiety, a stronger and greater Pulse, an excessive Thirst, a great Pain of the Head and Limbs, this Stage corresponds to the State or Height of continual Fevers.

85. Lastly, there generally appears a profuse Sweat, or Remission of all the Symptoms, a thick Urine, with a Sediment resembling Brick Dust, Sleep, a total Absence of the Fever, Lassitude, and Weakness.

86. Intermitting Fevers, going through their three different Stages (83, 84, 85) injure the Fibres of the minute Vessels and Viscera, producing Obstructions, Stagnations, Coagulations, and sometimes attenuating and dissolving the Fluids: Hence the Vessels are weakened, and the Fluids become morbid; especially in that Species of the Disease, in which their Parts are less assimilated and not duly mix'd; which Circumstances united produce an acrimonious State of the Juices; from hence, all these Things concurring, arises an easy Propensity to Sweat, which very much weakens the Patient, as the viscid Part of the Blood transpires.

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In this State the Urine is extremely thick and turbid, pinguious, and like the Saliva. Hence the weak, resolved, and scarce coherent Blood, being deprived of its finest Parts, the rest remains acrid and thick; and so in Consequence of the Laxity of the Vessels, and the Acrimony of the Fluids, those long continued Fevers sometimes terminate in Chronical Diseases, as the Scurvy, Dropsy, Jaundice, Leucophlegmatia, scirrhus Tumors of the Abdomen, and all their dismal Consequences.

87. But if intermitting Fevers are not of the malignant Kind, they dispose the Patient to Longævity, and cleanse the Body from inveterate Disorders.

88. Hence, after an accurate Examination of the whole History of intermitting Fevers (79 to 88) their proximate Cause seems to be, a Viscidity of the arterial Blood upon the Accession of any Cause, producing a quicker and stronger Contraction of the Heart, and a Resolution of the stagnating Fluids.

89. Since therefore this Order (83, 84, 85) is always observ'd in Intermittents, the Physician who can conquer the first Attack, (83) and the primary Cause, (88) may by that Means, remove the whole ensuing Paroxysm.

90. Besides, as an infinite Number of Causes, and these not very considerable, may produce the first Stage (83) of a perfect intermitting Fever, (79) and its Cause: (88) And as many such Causes may be produced, increased, and

and fomented in all the Fluids form'd and secreted in the Body, it is more difficult to distinguish the Cause already formed from infinite possible Circumstances, than to invent one Cause sufficient to account for the stated Periods of Intermittents, from the Laws of the animal Oeconomy. This is plain to every curious Enquirer.

91. The Cure therefore requires, that we should use aperient, saline, alkaline, aromatic, mineral, diluting, oleous, and mild Substances, with Heat, Motion, Fomentations, and Frictions, during the Intermission, or in the first Stage. (83)

92. In order to cleanse the *Primæ Viæ* from the redundant Sordes, a Purge or a Vomit is often very beneficial, given either of them so long before the Paroxysm, that the Operation may be over before the Fit comes on. That this is necessary may be known from the Patient's Way of Living, preceding Diseases and Symptoms, as a Nausea, a Vomitting, Eructations, Tumors, the Breath fœtid, the Sordes of the Tongue, Throat, and Palate, and want of Appetite. After the Operation, the Tumult of the Spirits thereby occasioned, is to be appeased by a paregoric Medicine, before the Paroxysm returns.

93. These are beneficial when, by their Stimulus, they operate both Ways. (92)

94. Otherwise they are injurious, (when they weaken and evacuate the most fluid Parts of the

the Juices, and thereby disturb the necessary Digestions, and thus either lengthen the Disease, or bring on Death. Both the cold and hot Fits are often removed by Sudorifics, whilst some Hours before the known Time of the Paroxysm, the Patient's Body being filled with an aperient, diluting, and gently narcotic Liquor, a Sweat excited before the Paroxysm, and continued till two Hours after its usual Return.

95. Hence also Venesection is always hurtful in itself, though it may prove accidentally beneficial; as also is a light and exactly regulated Diet.

96. When this Fever is in the second Stage, (84) aqueous Liquors, mix'd with warm subacid, aperient, and nitrous Ingredients are necessary, and the Patient is to be kept quiet and moderately warm.

97. When the Paroxysm is resolved by a Crisis, then it is proper to use vinous Ptisans, Broths of Flesh, and temperate Decoctions, to supply the Matter of Sweat and Urine: Thus these Excretions are to be excited, not by the Force of Heat, Medicines, or Bed Cloaths; but gently promoted by an increased Quantity of these Substances long persisted in.

98. Violent Symptoms are to be removed by the Rules prescribed for the Cure of acute Fevers. The vital Powers are best supported by a just Medium in all Things.

99. When

99. When the Fever is removed, the Patient is to be restored by strengthening Diet and Medicines, and when able to bear it, he is to be purged several Times.

100. But if an Autumnal intermittent Fever is very violent; if the Patient is weaken'd by the Disease; if the Disease has continued some Time, and there are no Signs of an internal Inflammation, nor of Pus collected any where, nor of a considerable Obstruction of any of the Viscera, the Disease is to be removed by the Peruvian Bark, given in the Form of Powder, Infusion, Extract, Decoction, or Syrup, with proper Specifics during the Intermision, in a due Order, and proper Doses, joined with a due Regimen.

101. That the Cure of particular Intermittents may be understood, observe,

First, That the shorter the Intervals of true Intermittents are, the sooner they are cured; and the longer the Intervals are, the more Time is required for their Cure.

Secondly, For the same Reason they approach nearer the Nature of acute Fevers, and are sometimes changed into them.

Thirdly, Perhaps for this Reason, their Cause is more moveable the more copious.

Fourthly, Hence Vernal Intermittents, upon the Approach of warm Weather, are spontaneously terminated.

Fifthly, Autumnal Intermittents, on the Approach of cold Weather, are increased.

Hence

Hence it is obvious what Fevers are curable, and by what Medicines.

Having thus studiously finished and compared together, the *Principles of Physick*, with the *Appendix*, who can view this Art without Admiration! For to this ART is owing the Preservation of Health, and consequently of the Vigour of the Mind, the noblest Part of Man, by which great and worthy Actions are performed. For where is there so powerful a Teacher of an abstemious and sober Life, as Physick? Or, what can more strongly excite us, to moderate our Anger, to banish Sadness, and to avoid all Excess in indulging the sensual Appetites, than this noble Faculty.

You have made a good Use of our *Principles of Physick*, and I congratulate you upon the happy Success of your Studies.



For the further Instruction of the young Practitioner, it has been thought necessary to subjoin the Method of treating some Diseases, which Dr. Groenvelt has not taken Notice of, according to the present Rules of Practice of the most eminent Physicians; particularly noting those Things, which have been found most serviceable in each Distemper treated of, from repeated Experience.

Of the Small Pox.

THE Origin of this Disease is uncertain, we find no mention of it before the *Arabian Physicians*: Most Authors divide it into the distinct and confluent Sorts; but, in my Opinion, it more accurately, and agreeably to the Nature of the Disease, may be divided into Simple and Malignant. The simple or distinct Sort begins with Shivering, intense Heat, a violent Pain of the Head and Back, an Inclination to vomit. In Adults, a great Propensity to sweat, a sure Sign the Pox will not run together, a Pain in the Stomach when pressed with the Hand, a Dullness and Drowsiness, and sometimes Epileptic Fits, particularly in Children: If the Fit happens over Night the Small Pox will certainly appear in the Morning, and are, generally speaking, of the favourable Sort.

On the fourth Day from the Beginning they break out, sometimes later, seldom before; all which Time the Symptoms either abate or wholly disappear.

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The Spots at first are reddish, feel hard within the Skin, and spread themselves over the Face, Neck, Breast, and the whole Body. There is great Pain in the Fauces, which increases as the Pustules grow turgid.

On the eighth Day the Spaces between the Pustules, which were hitherto white, begin to grow red and swell; the Eye-lids are puffed up, and the Eyes closed: Next to the Face, the Hands begin to swell, and the Fingers are distended; the Pustules of the Face, before smooth, begin now to grow rough (the first Sign of Maturation) and throw out a yellowish Matter, in Colour like a Honeycomb. The Pustules about the Face as they ripen, grow more rough and yellow; but on the Hands they grow whiter and less rough. On the eleventh Day the swelling of the Face, and Inflammation disappear, the Pustules being now ripe, grow dry and fall off. On the fourteenth or fifteenth Day they perish intirely, except some obstinate Pustules on the Hands which continue longer, and sometimes break. Through the whole Course of this Disease, the Patient's Body is either wholly bound up, or he goes to Stool but very seldom. Generally those who die of this Kind of Small Pox, die on the eighth Day: Then the Face, which ought to be turgid, and the Interstices florid, on the contrary is flaccid and whitish; and if a Sweat has been injudiciously promoted by Cordials, and a hot Regimen, the Patient is seized with a Phrenzy, a violent Anxiety, and Sicknefs; he makes Water often and little, and a few Hours close the tragical Scene.

The malignant or confluent Sort, is that in which the Eruption appears with a malignant Fever. The Sicknefs, Anxiety, Vomiting, &c. more cruelly torment

torment the Patient, yet he does not so soon fall into a Sweat as in the distinct Kind. In Adults a Salivation, and in Children a Diarrhea, is most frequently a Sign of the confluent Sort. On the third Day, sometimes before, seldom later, the Spots appear, and the sooner, the more they will run together. Sometimes the Eruption is retarded till the fourth or fifth Day by some terrible Symptom, such as, a most acute Pain in the Loins, like the Gravel; in the Side, like a Pleurisy; in the Joints like the Rheumatism; in the Stomach, with violent Sicknefs and Vomiting. These Symptoms do not remit after the Eruption, as in the simple Sort, but the Fever, and other Complaints, continue to molest the Patient many Days after. Sometimes the Spots appear like an Erysipelas, sometimes like the Measles, but are distinguished from them by the Time of the Eruption. As the Disease increases they do not rise to any considerable Height, but intangling with each other in the Face appear like a red Blister, and cover all the Countenance, which swells sooner than in the distinct Kind: Afterwards they seem not unlike a white Pellicle glued to the Face, and are not much higher than its Surface.

The eighth Day being past, the white Pellicle grows daily more rough, and of a dusky Colour; the Pain of the Skin becomes more intense, and in the more cruel Kind of this Disease, they do not fall off till after the twentieth Day. It is worthy of Observation, that the more the ripening Pustules are of a brownish Colour, they are the worse, and the longer falling off; and the more Yellow they are, the less they run together, and the sooner they disappear.

The Danger of the Disease is to be estimated, from the Number and Magnitude of the Pustules on the

the Face alone. The Pustules of the Hands and Feet are greatest ; and the farther they are removed from the Extremities, the less they are. A Spitting sometimes begins with the Eruption, sometimes two or three Days after it ; it is at first thin, but on the eleventh Day it grows more viscid, and is hawk'd up with Difficulty ; the Patient is thirsty, and hoarse, extremely sleepy, and his Senses exceeding dull ; he frequently coughs as he is drinking, and the Liquor regurgitates through his Nostrils : At this Time the Salivation generally ceases, but the Swelling of the Face ought not to go down till a Day or two after, when the Spitting is over ; if the Hands do not begin to swell remarkably, and continue so for some Time, the Patient will suddenly leave the World. A bad Regimen produces many irregular Symptoms, such as a subsiding of the Pustules, a Phrenzy, a Coma, purple Spots intermixed with the Pustules, and small black Spots on the Top of the Pox, subsiding in the middle, bloody Urine, &c. these are almost always fatal Signs. The Day on which the Patient is in most Danger, in the least crude and most common Sort of the Confluent, is the Eleventh from the first Attack of the Disease ; in the more crude the Fourteenth ; and in the most crude the Seventeenth ; sometimes, but seldom, the Patient does not die till the Twenty-first : But in the Space of Time from the Eleventh to the Seventeenth, as the Evening comes on, the Patient is daily tormented with Fits of great Inquietude.

In the Management of the Patient in the simple or distinct Sort, Regard should be had to the Season of the Year, and the Strength of the Patient. 'Tis absolutely necessary to keep the Patient in Bed during the first Days of the Distemper, taking Care to defend

defend him from the Inclemency of the Winter, by proper Means ; and to moderate the excessive Heat in Summer by cool Air ; for the Patient ought not to be stifled by Heat and Cloaths, nor should the Eruption and Perspiration be checked by Cold. However there ought to be a proper Supply of pure and cool Air ; because a hot Air causes Difficulty of Breathing, checks the Secretion of Urine, and increases the Number of Pustules on the internal Organs of the Body ; the Consequence whereof, we may justly apprehend to be Inflammations and Gangrenes. The Diet ought to be slender, moistening, and cooling, such as Oatmeal, or Barley Gruel ; and in the Beginning, the best Regimen is that which keeps the Body open, and promotes Urine ; for *Dr. Mead* says, the keeping the Body open in the Beginning, is a most important Advice, if the making of Urine also be promoted, so as to discharge it plentifully. This End is obtained by boiling preserved Fruits with their Food, such as Figs, Damascenes, Plumbs, and Tamarinds, by giving them subacid Liquors for Drink, as Small Beer, acidulated with Orange, or Lemon Juice, Apples boiled in Milk and turned to Whey, Emulsions made with Barley Water and Almonds, Mofelle, or Rhenish Wines most plentifully diluted with Water, &c.

In the Cure, *Sydenham* directs Bleeding on any of the three first Days, to nine or ten Ounces, and then prescribes an Emetic. *Hoffman*, judges it to be proper on the first Day of the Invasion, and prescribes two Grains of emetic Tartar in Cinnamon Water to Adults. *Dr. Mead* likewise in the first Place, advises Bleeding, even to Children, and affirms, that when they are seized with Convulsions

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at the Onset of this Disease, some Evacuations ought to be made, which may be done safely by Leeches applied to the Temples, or behind the Ears. Likewise, if Blood cannot be drawn from the Arm, in most young Subjects, either of the Jugulars may be opened without any Inconvenience. That Regard is to be had to the Patient's Strength must be allow'd, but the Weakness is seldom so great as not to allow some Loss of Blood. In Youths, and Adults, it is often necessary to take away Blood two or three Times, only with an Intermission of two or three Days between each Time. And it is certain when the Pulse is low, arising from a Thickness of the Blood, and the vital Fluid is not repelled from the Heart with due Force, by removing the Oppression, the Patient's Strength is observed even to increase with the Bleeding; and it is found to be so far from being an Obstacle to the Eruption of the Pustules, that it forwards it considerably. When the vast Number of small Pustules forebode a Disease of the worst Kind, the Face of Affairs has been so remarkably changed upon one or two Bleedings, that the Pustules increased in Size, and diminished in Number. It likewise prevents Delirium, Convulsions, Difficulty of Breathing, and the like. Bleeding may be used at all Times when the Violence of the Fever requires it, and the Patient's Strength is able to bear it. A Phrenzy coming on the fourth Day of the Eruption, has been justly esteemed a fatal Omen; yet many have been saved by drawing Blood immediately, and then throwing in a Glyster. When the Stomach abounds with Phlegm, or Bile, or is loaded with Food unseasonably taken in, a Vomit is necessary; otherwise a Purge may be prescribed before the Eruption of the Pustules: This
may

may be the Infusion of Senna with Manna, or Manna alone ; especially for Children, for no Disturbance is to be raised in the Body.

To keep the Inflammation of the Blood within due Bounds, and assist the Expulsion of the morbid Matter through the Skin.

Take Pulv. Contrayerva Comp. half an Ounce, Nitri Purific. two Drachms, m. f. Pulver. Num. viii. terve quaterve in die sumend.

This may be increased or diminished according to the Symptoms, diminishing the Quantity for Children in Proportion to their Age.

Sometimes equal Quantities of these may be prescribed ; and if the Effervescence of the Fever runs very high, a proper Quantity of the Spirit of Vitriol may be added to the Patient's Drink : But if there be any Keckings or Reachings to vomit, they will be removed by the following :

Take Succ. Limon. one Ounce, Sal. Absynth. one Scruple, Aqua Cinn. Ten. one Ounce. Sacch. Cand. one Drachm, m. f. Haustus ad libitum.

When the Eruption of the Pustules is compleated, which generally happens on the fifth Day from the Attack, let the Patient take an Ounce of Diacodion every Evening till the tenth Day after the Invasion. But Dr. Mead says, these Medicines are not to be used over hastily ; for all Anodynes in some Measure, obstruct the Separation of the morbid Matter from the Blood, unless the Pain happens to be excessive ; wherefore it is not proper to employ them till the Eruption of the Pustules is compleated, and then they may be administered with Safety. These Medicines agree not so well with Infants, but Adults may take a Dose of Thebaic Tincture, eighteen Drops for an Ounce of Diacodion, and twenty-five

five Drops for an Ounce and Half; and this may be repeated Evening and Morning in Case of great Inquietude : But if towards the End of the Disease, the Patient happens to be seized with a Shortness of Breath, or Danger of Choaking from viscid Slime, these Medicines are intirely to be prohibited; rather, if the Patient be costive, and the Fever continues, which is generally the Case, the Body is to be opened with a gentle stimulating Glyster, every, or every other Day.

If this Method is proper in the simple distinct Small Pox, how much more will it be found necessary in the malignant confluent Sort, which is attended with greater Fear and Danger.

The Malignity appearing in various Forms, has given various Appellations to this Kind of Small Pox, the chief of which are these that follow, the Chrystalline, the Warty, and the Bloody.

In the Chrystalline Sort of the malignant Small Pox, the Water of the Pustules can never be brought to a laudable Suppuration; therefore while the thinner Parts are made to transpire through the Skin, the grosser ought to be drawn off through the Urinary Passages, by diuretic Medicines, To this Purpose Nitre may be administered three or four Times a Day, from a Scruple to half a Drachm, in small Wine, which is the only Sort at this Time proper, till near the End, when the Patient may be allowed a little Canary, or any other soft generous Wine to support his Strength. While Nitre is thus taken it will be proper to interpose Medicines which cherish the Heart, and promote the Flux of the Humours into the Pustules; such as *Raleigh's* Confection, the Cordial Confection, the Bezoardick Powder with Saffron; as also the following,

B b b

Take

Take e Chel. 69, C. one Scruple, Sperma Cæti fifteen Grains, Castor. R. Sal. Succin. Croci Anglicani ana four Grains, Confect. Alkerm. q. f. m. f. Bolus sexta vel octava quaq. hora sumend. in quovis Vehiculo.

Take Rad. Serpent. Virg. twelve Grains, Contrayerv. six Grains, Croci Angl. Castor. Russ. ana five Grains, Syr. Caryoph. q. f. m. f. Bolus urgente Symptomate superbibend. Haustulu sequente.

Take Spirit of Vitriol five, six, or eight Drops in a Draught of Moselle Wine.

Take Rad. Valerian. Sylv. subtiliss. Pulv. half a Drachm, Sal Vol. C. C. Camphor ana five Grains, m. f. Pulvis cum haustul. ex aqua Alexet. S.

Besides these, on the fifth or sixth Day of the Eruption, Blisters are to be applied between the Shoulders, and to the Arms and Legs. By thus discharging the Serosities, the Fever which increases when there is no further Derivation of Humours to the Skin, is seasonably prevented.

But this is a general Rule, says Dr. Mead, that whatever acute Diseases comes upon the Small Pox, it must be treated with its own peculiar Medicines: As, for Instance, the Bark, which has good Effects in mitigating the secondary Fever; and *Monro* tells us, that the Peruvian Bark fills the empty Vesicles with Matter, and changes the watery Sanies into thick white Pus. The Dose in Powder is from ten to forty Grains in some Cordial Julep, to be taken every four or five Hours: Children may take it in a Glyster with warm Milk; the Bowels being first unloaded. If the Glyster is retained too short a Time, Syrup of Poppies, or Diascordium may be added; but when the Lungs are greatly stuffed it is not to be given.

If

If the Spittle through Heat, is so tough that it cannot be hawked up, let a Gargle be frequently injected into the Throat with a Syringe. The following may be prescribed,

Take Cort. Ulmi. six Drachms, Rad. Liquor. half an Ounce, Passul. enucliat. Num. xx. Fol. Rosar. rub. pug. ii. Coq. in Aqua Fontan. q. s. ad one Pound and Half in colatura adde Oxym. Simpl. Mel. Rosar. ana two Ounces, m. f. Gargarisma.

Take Decoct. Pector. one Pound and Half, Syr. Mororum two Ounces, m. f. Gargarisma. Utatur Æger pro Gargarisma et Potu etiam ordinario.

Cataplasms of Horse Radish, Mustard Seed bruised, with a sufficient Quantity of Honey, may be applied to the Throat; and in case of Extremity, Gargles with Mustard Seed and Pepper, with the Addition of Oxymel, may be added.

In every Sort of this Disease it is proper to open the Body on the Decline; that is, on the ninth or tenth Day from the Eruption, because a putrid Fever generally comes on about that Time, while the Pustules are drying, (*Sydenham* mentions this Fever as coming on the eleventh, or later, but this is to be understood from the Time of the Invasion) or upon the Subsidence of the Swelling of the inflamed Skin, where there is no Suppuration; which Fever cannot be taken off with equal Safety by any other Means; but gentle Catharticks alone are to be employed in this Case, such as were directed before the Eruption of the Pustules; or thus,

Take Mannæ opt. one Ounce, solve in Aqua, Alexet. S. three Ounces, adde Elect. Lenitiv. three Drachms, Aqua Alexet. Spt. one Ounce and Half, m. f. Potio.

If

If the Patient's Body happens to be loose, this Remedy becomes less necessary, or may be postponed for some Days: Also when there is any purulent Matter lurking under the withered Skin of the Pustules, the Body is not to be purged, but rather to be supported by proper Medicines and Diet, till the Matter is all come away; this has run sometimes to the twenty-fourth Day of the Disease, and yet the Patient recovered.

Dr. *Mead* declares also, at this Time it will be proper to take away some Blood, if the Heat be too great, and the Patient has Strength to bear it.

If there happens an intire Suppression of Urine, Glauber's Salts are particularly useful, as they are both laxative and diuretic: The Dose from half an Ounce to an Ounce dissolved in any aqueous Vehicle.

The warty Small Pox is more dangerous than the Chrystalline; (tho' these are peculiar to the distinct Sort) because they contain no Fluid, but grow hard and prominent above the Skin like Warts; wherefore the Matter of the Disease being too thick, can neither suppurate nor pass off by Urine: Wherefore, it is necessary to use the utmost Endeavours to take off the Fever, and to promote Sweating, in order to digest the morbid Humours, by the cordial Medicines abovementioned. Blisters ought to be applied in this Case likewise. But the *Arabian* Physicians pronounced this Sort of the Disease to be always fatal.

The bloody Small Pox requires peculiar Attention. Now in this Sort, if there is any Room for Physick, those Medicines bid fairest for Success, which by their Stypticity, in some Measure thicken the Blood, and so check it, that it cannot break through even the minuteft Arteries: Such are the Peruvian

Pernvian Bark, Oil of Vitriol, Alum, and Dragons Blood. They are best used alternately in this Manner; a Drachm of the Bark may be given every sixth Hour, and three Hours after the following, which will prove a very powerful Medicine if thus compounded; mix three Parts of Allum in an Iron Laddle over a gentle Fire, with one Part of Dragons Blood, when the Mass is grown cold reduce it to a Powder; a Scruple of which made into a Bole with Conserve of Roses, will be a proper Dose. The most convenient Manner of giving the Oil of Vitriol, is in the Tincture of Roses; of which Tincture five or six Spoonfuls may be taken several Times in a Day, and the Patient's common Drink may be acidulated with it, especially if black or purple Spots appear among the Pustules: And this Medicine will be of Service, not only in the Bloody, but in all other Sorts likewise accompanied with these Spots. Blisters in this Case are safe enough, when a Delirium requires their Application.

Hoffman affirms, that Hæmorrhages in the Small Pox are better relieved by Butter Milk, and Whey, than any other Medicine whatsoever.

From the eighth Day to the End of the Disease, Garlick may be applied to the Soles of the Feet, which must be renewed every Day if the Brain be affected.

Twenty-one Days after the Invasion let a Vein be opened in the Arm, and the next Day give a Cathartick, which may be repeated every other Day three Times more.

This is necessary, because no Species of the eruptive Fever, the Measles excepted, requires the Body to be thoroughly cleansed of the Remains of the Disease more than this. After the Catharticks, the
Body

Body is to be restored to its former State by a Course of Milk, especially that of Asses, with suitable Food, and the Air and Amusements of the Country.

When the Pustules are perfectly dry and withered, the following elegant Prescription to take off the Marks left by the Small Pox, may be applied to the Face.

Take Ol. Amygd. D. one Ounce and Half, Cer. Alb. Sperma Cæti ana one Drachm, Balsam Gileadens. two Scruples. m. f. Art. et. f. Linimentum.

Corrosive Ulcers are best cured with Spirit of Vitriol, and a sufficient Quantity of Honey of Roses, which is a Remedy of great Efficacy.

As there are Accidents in the Small Pox which do not commonly occur, it will be proper to say something of them. Sometimes the Patient is seized with Convulsions, just before the Eruption; which is rather a good than a bad Sign in Children. In this Case Bleeding is to be avoided, and a Blister applied to the Neck; to the Soles of the Feet Plaisters of equal Parts of the Cephalick and Epispastick Plaister, not forgetting Antispasmodick Medicines inwardly; the chief of which are Russian Castor, wild Valerian, and volatile Salts, chemically extracted from Animals.

In Adults the Case is otherwise; for they, if not too weak, may lose a moderate Quantity of Blood, and then be put into the foregoing Method.

When ever a Woman with Child is seized with the Small Pox, there is great Reason to fear a Miscarriage, which is dangerous from the new Fever which attends that Accident, and from the Loss of Blood, which may bring her very low; and the nearer she is to her Time, the greater is the Risque she runs. Yet there have been Instances both of
Mother

Mother and Child doing well. A great deal depends on the Time of the Disease when the Abortion happens ; because, the more nearly it coincides with the Time of the ripening of the Pustules, the more Danger it occasions ; wherefore if the Flux be more than Nature usually requires, the Medicines proposed in the bloody Small Pox are to be given.

Women's Monthly Evacuations coinciding with the Small Pox, whether they happen at the usual Time, or are brought on irregularly by the extraordinary Effervescence of the Blood, in both Cases rather afford Relief than Danger. But if the Discharge should be so great as to weaken the Patient over-much, the Medicines recommended in the bloody Small Pox will be beneficial, not omitting to bleed if requisite.

Likewise Bleeding at the Nose in the Beginning of the Distemper, by diminishing the Heat, is rather serviceable than detrimental, if not too excessive.

Why the Small Pox scarce ever visits a Person above once, is a famous Problem, long canvassed, and with little Success. Dr. *Drake* accounts for it very plausibly, from the Alteration made in the Skin by that Disease ; for the Distention the Glands and Pores of the Skin suffer therein is so great, that they scarce ever recover their Tone again, so as to be able any more to confine the Matter in its Course outwards long enough, or in Quantity sufficient to create those pustulous Eruptions, which are the Diagnostics of the Disease. For tho' the same feverish Disposition should arise again in the Blood, yet the Passages through the Skin being more open, the Matter will never be stopped, so as to exhibit the Appearance of the Small Pox. Accordingly we find, that in Persons severely handled with this Disease,

the

the Face, which is usually the fullest, from the extraordinary Obstruction the Matter meets with, by the great Constipation of the Pores during the Disorder, seldom returns to its former Dimensions : Which Enlargement he accounts for, from the Dilatation of the Areolæ of the Glands and Pores of the Skin, not from any Augmentation of the Substance itself. What confirms this Hypothesis is, that Nurses, &c. who attend Persons sick of the Small Pox, are frequently a little affected by it, and have now and then two or three Eruptions ; that they have no more, seems to follow from the free Course of the Matter through the Skin : With this too, agrees that constant Observation, *That People of coarse Skins, in whom the Pores are largest, are always more favourably treated by this Distemper, than others ; and that it constantly leaves fine Skins coarser than it found them.*

This Solution would seem more probable, were it not that some have so very few of these Eruptions, perhaps not above twenty or thirty, which cannot be fairly allowed, so far to enlarge the Pores of the Skin, as to prevent any Return.

Others hold, that in a genuine Eruption, the Cause of the Distemper is so far evacuated, as scarce to leave a Probability of a Return ; and that, if Part of the original Cause did remain behind, it might, when the Air favours it, or when by other Accidents it is secreted from the Blood, appear in the Form of Eruptions, and so prove to be the Measles, Chicken Pox, &c.

It may indeed be objected, that these last mentioned often happen before the Small Pox ; but whatever be the Cause of the Small Pox, the separating Power must be in such a determined Proportion, or
it

it will fail to cause a regular Small Pox, and so acting proportionably, may produce any of the other Distempers just mentioned.

The Chicken, and Swine Pox, seem to be the Small Pox in a less Degree, tho' they sometimes precede, and sometimes succeed it. The Pustules appear to be of the same Kind; only in the Swine Pox they are much larger, and in the Chicken Pox somewhat less than in the Small Pox. There commonly appear five or six, sometimes twenty or thirty on the Face, and but very few on the Body. The Patient is very little indisposed, either before, at, or after their Appearance; tho' the sudden sinking of them often causes some Disorder, but it is quickly relieved by a little Sack and Saffron, or a Dose of Treacle Water. Grown Persons seldom keep within Doors for either; and upon that Account the Eruptions may continue the longer, because the cold Air is supposed to hinder their ripening, so that it is three Weeks or a Month before they totally disappear.

Of the Scurvy.

THIS Distemper, the most violent of all Chronical Disorders, chiefly affects the Inhabitants of cold Northern Countries, where it has always been common, and the nearer to the Sea the more severe it proves. The *Danes*, *Norwegians*, and other Inhabitants on the Coast of the *Baltic*, are vastly afflicted with it; nor do the *Germans*, *Dutch*, or our own Countrymen escape its Fury. Those who live idle sedentary Lives, especially those who live

in moist, low, and marshy Places ; as also those who feed on dried, smoaked, and salted Fish, or Flesh, unfermented Vegetables, &c. are most subject to the Attacks of this Disease : Likewise those who are inclined to hysteric, melancholic, or hypochondriac Disorders ; as also those who have taken large Quantities of the Peruvian Bark, without proper Evacuations, are frequently afflicted with it. Besides these, Physicians many Times attribute the Disease to bad Air, and unwholesome Waters ; and the eating large Quantities of Pulse, as Peas, Beans, &c. which furnish the Body with gross and improper Nutriment. This is particularly manifested to us in that remarkable Account of Lord *Anson's* Expedition to the *South Seas*, in which he lost a third Part of his Men by this cruel Disorder ; and the Calamity rose to such a Pitch, that the Callus of broken Bones, which had been compleatly formed for a long Time, was found dissolved, and the Fracture appeared as if it had never been consolidated. This shews us what a high Degree of Corruption and Putrefaction, the Juices of the Body are subject to from foul Air and improper Food ; and this is evident from the Appearance of the Blood, which, when drawn, has nothing of its natural red Colour, but resembles a dark muddy Puddle, and this will enable us to account for those fatal Hæmorrhages and obstinate Obstructions, which accompany, and are the Consequence of this deplorable Disease ; which when thoroughly fix'd, *Charleston* tells us, can only be palliated, and is seldom to be cured, it being almost impossible to bring the Blood, when wholly corrupted, to its natural State. How necessary then it is to attack this many headed Hydra in its Infancy, to explore its Causes, and prevent its dismal Effects most clearly appears ; and
this

this will be best effected, by explaining to our Pupil the many various Forms and Appearances it so frequently puts on ; and by what Symptoms it may be best known to be existing in the Body.

Medicinal Writers have given such various and inconsistent Accounts of this Malady, that it is no easy Task to determine by what Symptoms it is best known ; but the following the Pupil can never be deceived in ; as universal Weariness, Heaviness of the Body, Difficulty of Breathing, stinking Breath, Rottenness of the Gums, Bleedings at the Nose, Swelling of the Legs, which are always livid, yellow, or full of Violet colour'd Spots ; the Colour of the Face being in general of a pale Tawny : The Patient when he wakes in a Morning, finds himself as if tired, and bruised in all his Joints and Muscles, declines all Manner of Exercise, and loves to be in a sitting, or lying Posture. In the second Stage, the Gums grow painful and swell, bleeding upon the least Pressure ; Pains are frequently found in the Head, Breast, Belly, Legs, and in all the external and internal Parts of the Body, imitating Distempers peculiar to these Parts. In the Third Stage the Gums, which were before inflamed, grow putrid, and a Gangrene ensues ; the loose Teeth grow yellow, black, and rotten, and the sublingual Glands become varicous ; fatal Hæmorrhages often break out, without any Appearance of a Wound, from the Lips, Nose, Mouth, Lungs, Liver, Spleen, &c. Obstinate Ulcers arise, especially in the Legs, attended with a cadaverous Smell, which are apt to gangrene, and which no Applications will cure. There are excruciating Pains felt in the Joints, Bones, and Viscera, which are more violent in the Night than at any other Time. This, in the fourth Stage, causes Fevers of various Kinds, which bring

bring on Diarrhæas, Dysenteries, Dropsy, Consumption, Putrefaction of the Liver, Spleen, Mesentery, mortal Faintings, and Anxieties, and at last Death itself.

By this it appears the Blood is faulty in its Texture, being either too thick or too thin, or too much impregnated with a muriatic, alkaline, or acid Acrimony; to discover which requires the utmost Attention, and most accurate Inquiry. It is to be laid down as a general Rule in the Cure of this Disease, that it is to be treated with the most mild and simple Medicines; that which is thick is to be attenuated, that which is stagnant to be rendered moveable, and that which is coagulated to be made fluid: To answer this Intention, nothing more conduces than pure, light, and simple Waters, the genuine Dissolvent of all Salts; and there is not a more universal Remedy for the Scurvy, in the most obstinate and confirmed Cases, than the Mineral Waters now so much in Vogue; which will be still more certain if an accurate Regimen be observed, and the Waters assisted by a repeated Exhibition of proper antiscorbutic and balsamic Medicines; than which nothing is more effectual in correcting a scorbutic Acrimony. A Milk Diet, or Whey impregnated with the Juices of Scurvy Grass, Water Cresses, &c. is most excellent; for Scurvy Grass, and all the Species of Garden and Water Cresses, which are justly esteemed Antiscorbutic, induce a surprising Alteration in the disordered Solids and Fluids. To these may be added Lime Water, with Sassafras, Guaiacum, Tops of Fir or Pine Trees, Juniper Berries, &c. Decoctions being made of them, and their Use continued for a long Season.

But it is here most earnestly recommended, and carefully to be observed by the young Practitioner,
that

that when the Pulse is great and hard, the cooling Antiscorbuticks, with gentle Evacuations and Bleeding, take Place. But when the Pulse is weak, small, and unequal, it requires hot Antiscorbutics to raise the Pulse, and evacuate the Serum.

In the first Case, unless there be Suspicion of a Dropsy, take away eight Ounces of Blood, and the next Morning give the common purging Potion, which should be repeated for three Times, every third Day, keeping an exact Method of Diet on the intermediate Days, which is equal to Medicine, and which being neglected, the Scurvy becomes incurable. The Days on which Purging is omitted prescribe as follows.

Take Conserv. Aurant.---Lujulæ ana one Ounce, Pulv. Ari C. fix Drachms, Sal. Diuretic. one Drachm and Half, Syr. Aurant. q. f. ut f. Electarium cujus sumat quant. nuc. mosch. maj. matutina, quinta pomeridiana, et hora somni superbibendo Cochl. sex succ. Scorbutic, sequent.

Take Succ. Cochl. Hortens. one Pound, Beca-bungæ, Nasturtii Aquatici, ana half a Pound, Aurantium Hispalensium ten Ounces, misce et postquam fæces subsederint, effunde et cola.

This is to be given the intermediate Days of Purging, and to be continued for three Months after. In the weak, low, and depressed Pulse, Chalybeats, Bitters, and Stomachics, joined with Diuretics are necessary, as Pillulæ, Ecphraticæ, Tinctur. Cantharid. Vin. Amar. &c. or prescribe as follows.

Take Conserv. Absynth. Maritim. one Ounce and Half, Antimon. Crud. Pulv. half an Ounce, Chalyb. cum sulph. Pptæ three Drachms, Spec. Aromatic. Cort. Winter. ana one Drachm and half, Syr. Aurant, q. f. ut f. Electarium de quo capiat q. nuc mosch. ter in die sumend. superbibendo Cochl. iv. Express. sequent.

Take

Take Milleped. Viv. four Ounces, Sacch. Cand. two Ounces, Vini Alb. one Pint, contunde in mortario et cola pro Ufu.

In this Species of Scurvy, if the Gums are affected use the following.

Take Spt. Vin. C. half an Ounce, Tinctur. Myrrh. S. one Ounce, Rob. Juniper. half an Ounce, Aqua Absynth. four Ounces, Sal. Gemm. one Drachm, m. f. Gargarisma sæpe utend.

In hot Scurvies the following.

Take Spt. Sal. marin. two Drachms, Aquæ Stillatitiæ Salv. eight Ounces, m. f. Gargarisma.

In Hæmorrhages, which are not uncommon in this Disease, Dr. *Mead* recommends Mynsicht's Elixir of Vitriol, taken in cold Water at proper Intervals; and sometimes the Styptic Tincture taken in the same Manner.

In the alkaline and muriatic Scurvy, which is distinguished by the uncommon Fluidity and Thinness of the Blood, and is generally found in old Sailors, and those who live on smoaked or dried Fish and Flesh; Whey drank long and copiously, produces happy Effects: The Juices of Oranges, Citrons, and all ripe Fruits, greatly contribute to forward the Cure.

Pains of the Breast and Abdomen are not to be treated with hot Medicines; Chicken Broth, Oil of Sweet Almonds and Sperma Cæti have a good Effect; particularly when small Doses of Opiates, corrected by gentle Purgatives are exhibited; but this is not to be repeated above three Times. Emollient Glysters of Milk with Bath Water, are likewise useful, to which may be added a small Quantity of Saffron.

In the acid Scurvy, when the Blood appears thicker and blacker than usual, among the whole Tribe of deobstruent Medicines, nothing is better than
Steel

Steel Waters, which easily penetrating the small capillary Vessels, free them from all Obstructions, without leaving any Heat or Acrimony behind them.

In this Case China Decoctions, strengthening Broths made of Snails, Cray Fish, &c. with Asses and Goats Milk, should be frequently taken and continued many Weeks; and if these fail there is little Help to be expected from Medicine.

Of the Rheumatism.

THIS Disease is common at any Season, but most frequent in Autumn. Its Attacks are attended with frequent and slight Shiverings, a Fever, which increases with great Violence towards the Evening. This Distemper sometimes continues for Months, nay Years, not always with the same Degree of Violence, but renewing its Paroxysms from Time to Time; whence it easily changes into the Gout, the morbid Matter of both Distempers being the same. This Distemper chiefly attacks the Arms, Wrists, Shoulders, Knees, Legs, and Vitals; quickly shifting itself from Place to Place, and is often attended with a Redness and Swelling. Bleeding is so necessary in this Disorder, particularly when it affects the Head or Vitals, that it must be repeated several Times, according to the Strength of the Patient; emollient Glysters may be injected the Days Bleeding is omitted: But in young People, and those who have lived temperately, it may be cured by a simple, refrigerating, and moderately nourishing Diet; as living wholly on Whey, with Antiscorbuticks, Emulsions, Ptisans with Barley, Liquorish, &c. After Bleeding, Emeticks are to be exhibited, with gentle Purgatives, as the Countess of *Warwick's* Powder, &c. with an anodyne Draught at Night. Concerning the great Efficacy of Emetics several Times repeated, our Pupil should consult Dr. *Musgrave*. The Joints may be embrocated with equal Parts of Olive Oil, and the volatile Spirit of Sal Ammoniac twice a Day.

Epispasticks

Epispasticks are to be applied to the Parts affected; especially in that Species of it called the Sciatica *Musgrave* observes, that when the Vegetable Kingdom fails, the Mineral must be called in; and Dr. *James* has writ a Treatise on the Use of Mercurial Preparations in the Cure both of this Disorder, and likewise in the Gout. Dr. *Huxham* says, the most obstinate Rheumatic Pains are to be cured by the following.

Take Vit. Antimon. one Ounce, Vini Montani one Pint, Rad. Z. Z. pulv. one Drachm; macera per Dies quatuor sine Calore et filtra per Chartam; the Dose twenty or thirty Drops in any proper Vehicle, twice or three Times a Day, according as it operates.

This judicious Practitioner says its Effects are so wonderful, that whether your Intention is to open Obstructions, or deterge the most inmost Recesses of the Body, it is of superlative Efficacy, nothing is a more safe or certain Sudorific. It may be given successfully in Fevers of the slow and intermitting Kind, but more especially in obstinate Rheumatisms.

Having premised thus much, a Relapse is to be prevented by moderate Doses of the Bark, Gum Guaiacum, and Cinnabar of Antimony. This is likewise good in the Venereal Rheumatism. *Hoffman* confidently affirms, that crude Antimony reduced to a fine Powder, and given daily with a Decoction of the Woods, will cure the most inveterate Pains, and Contractions of the Joints; the Dose is ten Grains, inereasing it daily till you come to half a Drachm.

F I N I S.





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